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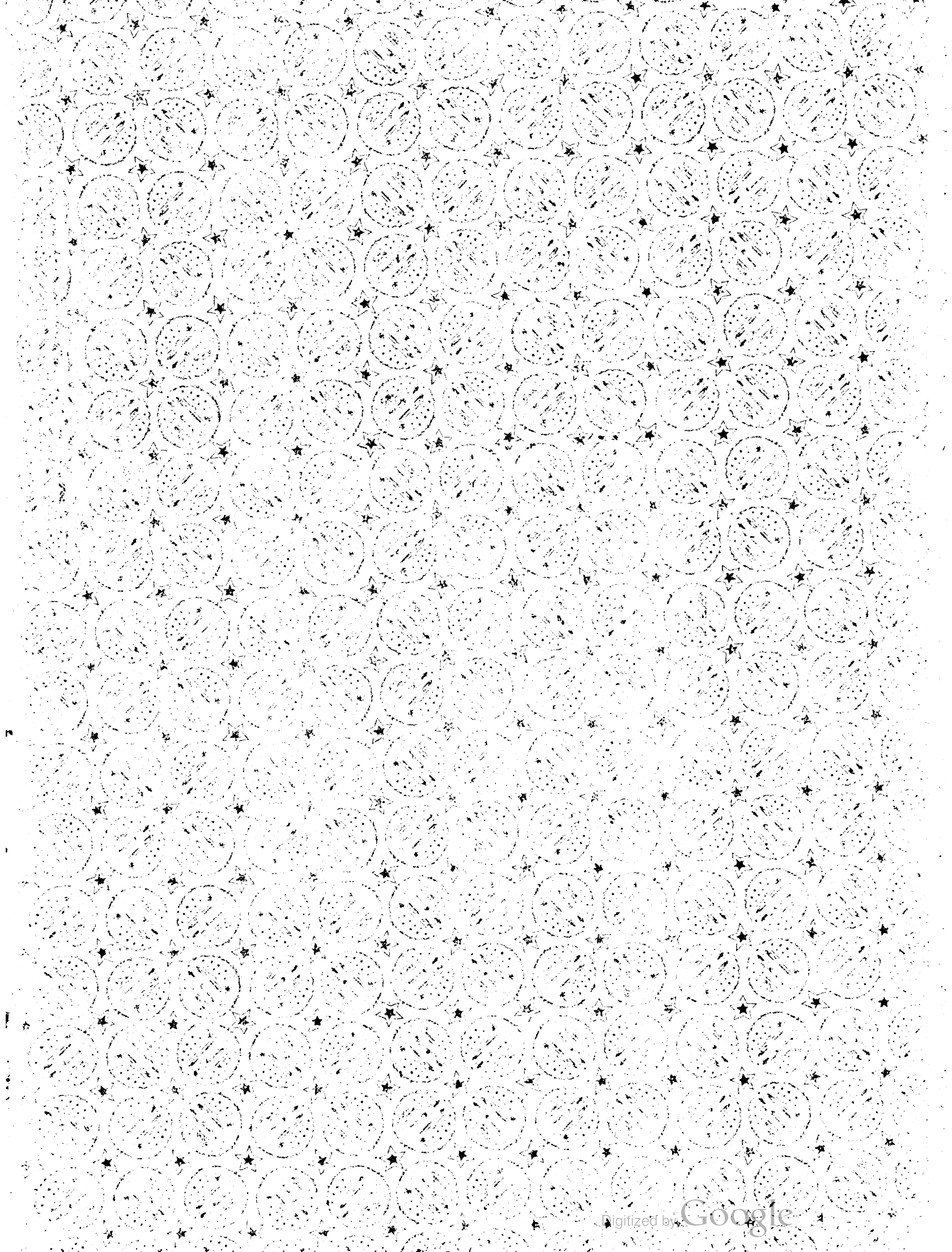
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Graphite

Vol. X.

JANUARY, 1908.

No. 1.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

COPYRIGHT, 1908, BY JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

NEW YEAR GREETINGS

to our many friends—may the coming year
fill to the brim your cup of happiness.

UNGRATEFUL PEOPLE.

Count Tolstoy in a letter published in St. Petersburg, asks that the many requests for financial assistance that are sent him be discontinued. He explains that twenty years ago he surrendered his property to his heirs "as if he were already dead and that the sole sums at his disposal now "are occasional foreign contributions which I distribute in the neighborhood." The letter adds:

"I am overwhelmed with petitions, and when I answer that I regret being unable to help the petitioners they reply in a cross-tempered manner, and when I do not answer the petitioners also write in a cross-tempered way. If the public believes me when I say I have no property it should spare me from such petitions, and if it thinks I am a deceiver, the public should not expect benevolence on the part of such a man."

BROKEN NICKEL ANODES.

How to make use of these, so that they may be molded and used over again.

We are indebted to *Metal Industry* for the following method of making use of broken nickel anodes:

You can produce very satisfactory nickel anodes from your scrap by adding about 2 pounds of Straits tin to each 100 pounds of nickel. It is not necessary to anneal after casting. Proceed as follows: Prepare a wooden pattern of the desired shape of anode and make a sand mold in the ordinary way. Use a graphite crucible for melting and for a flux use borax or fluor spar and lime mixed in the proportion of 1 part of the former to 2 of the latter. When the proper temperature is reached add the tin and mix thoroughly, using, if possible, a graphite stirring rod. The success of nickel anode castings is in obtaining the right temperature.

STOVE POLISH IGNITES AND FLAMES FATALLY INJURE WOMAN.

The *Buffalo Courier* of November 16, 1907, contains the following:

Mrs. Samuel D. Carter of Ithaca, N. Y., aged twenty-two, was badly burned this afternoon and lies at the city hospital in a critical condition. Mrs. Carter was engaged in cleaning her kitchen range with stove polish when the preparation exploded and she was wrapped in flames. She rushed out into the street, but the fire had gained considerable headway before neighbors came to her assistance. Her back, face and arms were badly burned. Because of her youth and vitality, the hospital authorities have hopes of her recovery.

WHERE IS HOLIDAY?

One of the young ladies of the Dixon Office was engaged in copying a salesman's route list a portion of which ran as follows:

Piermont, N. Y., Dec., 24.
Holiday " 25.

Holiday, Dec. 25, was a puzzler. Christmas and all other national holidays are recognized by the Dixon Company, but it must be supposed that the young lady in question was so thoroughly centered on her work that the suggestion of a holiday date made no impression. It was only after some inquiry had been made concerning the geographical location of said Holiday that the true significance of the designation was appreciated.

WHEN a King asked Euclid, the mathematician, whether he could not explain his art to him in a more compendious manner, he was answered that there was no royal way to geometry. Other things may be seized by might, or purchased with money; but knowledge is to be gained only by study, and study to be prosecuted only in retirement.—JOHNSON.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

OFFICERS:

President—EDWARD F. C. YOUNG,
Vice Pres.—GEORGE T. SMITH,
Treasurer—GEORGE E. LONG,
Secretary—HARRY DAILEY.

DIRECTORS:

EDWARD F. C. YOUNG,	WILLIAM MURRAY,
GEORGE T. SMITH,	EDWARD L. YOUNG,
GEORGE E. LONG,	JOSEPH D. BEDLE,
HARRY DAILEY.	

BRANCH OFFICES:

NEW YORK SALESROOM, 68 Reade Street.
PHILADELPHIA SALESROOM, 1020 Arch Street.
SAN FRANCISCO SALESROOM, 1325 Jackson Street, Oakland, Cal.
CHICAGO OFFICE, 1324 Monadnock Block.
BOSTON OFFICE, 101 Paddock Building.
PITTSBURG OFFICE, 2213 Farmers' Bank Building.
ST. LOUIS OFFICE, 501 Victoria Building.
WASHINGTON, D. C. OFFICE, 925 Colorado Building.
BALTIMORE OFFICE, 1005 Union Trust Building.
LONDON OFFICE AND SALESROOM, 26 Victoria Street.

"BOOK WELL WORTH READING."

"Graphite as a Lubricant" is the title of a handsome book of more than 80 pages, issued by the Joseph Dixon Crucible Co., Jersey City, N. J., and it is a beautifully printed and illustrated treatise upon the theory and practise of graphite lubrication. A very interesting chapter on Friction and Lubrication introduces the reader to the main subject which is very entertainingly treated. It is a book well worth reading; and it will be sent free upon application.

—*The Threshermen's Review.*

PRESSURE OF THE SEA.

There are spots in the ocean where the water is five miles deep. If it is true that the pressure of the water on any body in the water is one pound to the square inch for every two feet of the depth, anything at the bottom of one of the "five mile holes" would have a pressure about it of 13,200

pounds to every square inch. There is nothing of human manufacture that would resist such a pressure. That it exists there is no doubt. It is known that the pressure on a well-corked glass bottle at the depth of 300 feet is so great that the water will force its way through the pores of the glass. It is also said that pieces of wood have been weighted and sunk in the sea to such a depth that the tissues have become so condensed that the wood has lost its buoyancy and would never float again. It could not be even made to burn when dry.—*Marine Journal.*

GAME CALLED.

Game called. The day's hot work is done;
The Player is a man again
And even as you and other men
Is grateful that his rest is won.

Game called. The bleachers' right to groan
He purchased with a few poor pence
Is forfeited. Outside the fence
The Player calls his soul his own.

Game called. The effort which they cheered
Was good because they saw it win;
For failure is our only sin:
A stronger struggle—and they jeered.

Game called. And we have spent our breath.
No more the mad mob roars and frets;
The world turns from us and forgets
The Game of Life, the Umpire, Death.

Game called. An error or a hit?
Why, what to us are praise or blame?
We only know we played the game.
Home beckons—and the lights are lit.

—*Appleton's Magazine.*

HOW THE GAS ENGINE WORKS.

Nothing could be simpler than the working of a gas engine. "You see, when the piston comes up and compresses a lump of gas a spark jumps in and touches it off and the engine gives a poke, which turns the crank shaft around. Then the piston comes back and chases out the burned gas and takes in a fresh charge as it goes back; then it comes up and the load gets a spark and the piston is blown back and the crank shaft gets another poke, just as before. Every time a spark is let in the engine gets a poke, and gives it to the crank shaft, you see. It's perfectly simple and simply perfect."—*Life.*

"ONE DAY," relates a teacher, "I gave a bright boy a problem in algebra, and although it was comparatively easy, he couldn't do it. 'You ought to be ashamed of yourself!' I remarked. 'At your age George Washington was a surveyor! The boy looked me straight in the eye. 'Yes, sir,' he replied, 'and at your age he was President of the United States!'"

—*The Hamiltonian.*

PRESSURE REDUCING VALVES.

BY W. H. WAKEMAN.

CHAPTER VIII.

Fig. 45 illustrates the application of a pressure reducing valve, or pump governor to a fire pump, and in order to follow the operation of this appliance it becomes necessary to consider the service in detail. A fire pump is supposed to be always ready for duty at a minute's notice (but it would take much longer to get some of them into full operation), therefore a certain water pressure is maintained in the discharge pipe, and this is carried to the small regulator by the

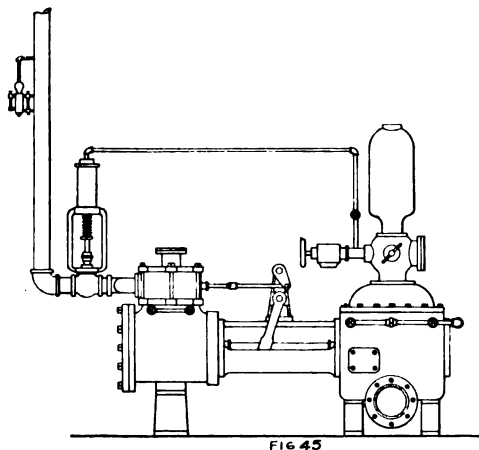


FIG 45

small pipe shown. In case this is reduced by the opening of sprinklers, or the use of a hose for quenching fire, the reduction allows the reducing valve to open and admit steam to the pump which starts at once and delivers enough water to restore the pressure if possible. The principle involved in a majority of cases is that water pressure is maintained in the sprinkler system of a building, by connection with the street main, or with an elevated tank. There are several ways of providing a supply of water when these fail, one of which is to install a fire pump and put a pressure reducing valve in the steam pipe. This is one of a type that shuts off tight when set properly, thus holding the pump at rest until the water pressure falls a few pounds when steam is duly admitted and the pump goes into service without delay.

The objection to this plan is that when a pump stands still for a long time, in the absence of a call for its use, it rusts and corrodes until it is not reliable. It is not a difficult matter to remove the cylinder heads once each month and coat the inside of the cylinder with Dixon's fine graphite mixed with cylinder oil, and this will prevent rusting of the surfaces so far as they can be reached, but in many plants such precautions are not taken, hence a plan for keeping the pump in motion at all times finds favor with insurance companies and careful steam plant owners. It consists of boring a small hole through the water piston, thus allowing a little water to circulate from one side of the piston to the other.

The pressure reducing valve is set to give steam enough to move the pistons slowly so long as the sprinkler system is in normal condition, but when a fire melts out several sprinkler heads on the wet pipe system, or the air pressure is released on the dry pipe system, and other means for supplying

water fail, then the fire pump is at once speeded up to its full capacity if necessary. It seems like a waste of money to keep a pump in continuous operation, but it may be the means of putting out a fire that would otherwise destroy the whole plant, hence the economy of prevention along this line.

Engineers are not always as careful to lubricate the valves and cylinder of a pump as they are to care for an engine in the same respect, but it is almost as necessary. Even where the motion is slow as above described it should not be neglected, as Dixon's flake graphite ought to be fed into the steam pipe by a suitable lubricator, so that it will pass through the reducing valve on its way and thus keep the moving parts in good order for effective service.

Fig. 46 illustrates a direct acting air compressor for use in connection with pneumatic systems where compressed air at 30 pounds pressure or less is used for operating automatic valves of different kinds and for various purposes. In the plant operated by the writer there are 146 valves opened and closed by compressed air, for the purpose of turning on and shutting off steam for heating purposes, and air under pressure is used for moving dampers in various places.

The compressor is controlled by the reducing valve in two different ways, as follows: When the valve 2 is closed and 3 is open, air from the tank or reservoir forming the foundation for the compressor enters the pipe shown and acts on the diaphragm of the reducing valve, as illustrated and explained in previous chapters. Suppose that a pressure of 20

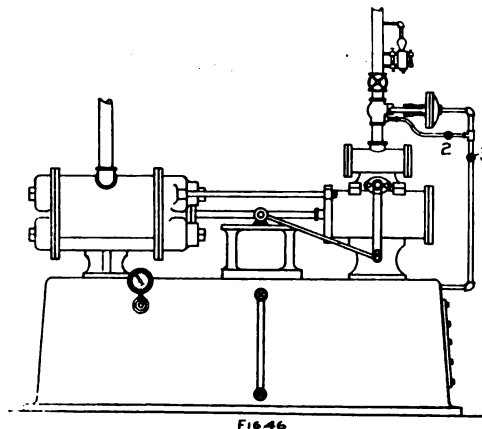


FIG 46

pounds is required in this case. The spring which opposes the air pressure acting on the diaphragm, is given sufficient tension to hold the main valve open at any less pressure, but as soon as 20 pounds are secured the total pressure on the diaphragm overcomes the spring, closes the main valve and stops the compressor. When the pressure falls about one pound, or less, the main valve opens and the process is continued as long as desired.

The other plan of operation is simple and easily understood. When the valve 3 is closed, direct communication with the air tank is shut off, but by opening 2 it leaves the appliance to operate as a regular reducing valve. Assume that the air cylinder is 8 inches in diameter, giving an area of 50 square inches, and the air pressure is 20 pounds to the square inch. The total resistance exclusive of friction is $50 \times 20 = 1,000$ pounds. If the steam cylinder is 5 inches in diameter its area is 19.6 square inches, and the steam

pressure necessary to balance the air pressure is $1,000 \div 19.6 = 51$ pounds. Assuming that 25 per cent. more is necessary in order to secure the required speed, gives a working steam pressure of $51 + (51 \times .25) = 63.75$ pounds.

If the boiler pressure is 100 pounds, and the steam piping is well designed, there will be but little reduction at the inlet of the pressure reducing valve, and it must be adjusted to close when there is 63.75 pounds at the outlet. Starting with no pressure in the tank, air is pumped into it until the gage indicates 20 pounds, but only a slight increase is sufficient to call for more than 63.75 pounds in the steam cylinder. This operates to close the pressure reducing valve and stop the compressor until enough air is used to slightly reduce the pressure when it starts again, and the process becomes continuous.

If there is no air tank under the compressor as illustrated one should be provided and located near the machine in order that it may act as a reservoir, also to allow moisture to settle to the bottom where it can be blown out. The fact that moisture collects in such a tank seems strange until we remember that air in its natural state contains more or less water, and when a comparatively large volume of it is compressed into a small space the moisture due to the larger volume appears in condensed form, and unless it is disposed of trouble is sure to follow because apparatus made to operate by compressed air will not work well when supplied with water. This refers to cases where but a small amount of air is actually used, as for illustration where dampers are slowly opened and closed for heating and ventilating purposes, etc.

However, all moisture may be taken out of compressed air by a tank near the compressor, after which it may pass through a long pipe, some parts of which are exposed to cold outside air, or it may be laid in a place that is exposed to a strong draft where the air is not very cold. The result of such exposure is moisture where it is not wanted, therefore another tank should be provided to catch and remove it. This should be located near the valves where air is used but it need not be as large as the first one, for storage capacity is not a necessity. For illustration take the case of a $1\frac{1}{2}$ inch pipe delivering air under 20 pounds pressure. A good tank for this purpose may be made of 6 inch pipe and suitable fittings. It should stand in a vertical position, with the air discharging into it near the center. Air is taken out of the top of it, with a suitable drip pipe at the bottom to blow out the water that collects. This does not need to be more than $\frac{1}{4}$ inch in diameter, so that it will remove all moisture if the valve is opened for about a minute every day. If this tank is 3 feet long it will answer every purpose.

A graphite lubricator should be placed on the suction pipe of the compressor, so that Dixon's flake graphite can be used to lubricate the valves and piston of this end of the machine. This not only insures good lubrication, but it prevents all danger of explosions from overheating poor cylinder oil, as accidents have happened from this cause in the past. Only a small quantity of graphite is required, and if more is used, it results in waste of good material.

(To be continued.)

GRAPHITE.

Although this country consumes about 35 per cent. of the world's total output of graphite, it furnishes but 20 per cent. of it. The amount imported into the United States in 1906, chiefly from Ceylon, was valued at \$1,554,212, and the value of the domestic production was only \$340,239.

The purest graphite is carbon with 0.05 to 0.20 per cent. of hydrogen, but the commercial grades of crystalline graphite contain clayey impurities, even the best, such as some of that from Ceylon, comprising as high as 15 per cent. of ash.

The distinction between crystalline and noncrystalline or amorphous graphite is not easily defined. Some of the graphite that is termed amorphous differs from crystalline graphite only in the microscopic size of the flakes; on the other hand, amorphous graphite may be more closely related to anthracite coal than to crystalline graphite. An instance of this is seen in the Rhode Island deposit, which was formerly known and reported as anthracite coal, but which now furnishes commercial graphite.

The chemical composition of graphite makes it a highly refractory material of exceptional value in the steel and other industries, and it finds its widest use in the manufacture of crucibles, muffles, brazing boxes, stirrers and other articles designed to be exposed to high temperatures. Its softness and black streak fit it for the use that has given it the name graphite; and the perfect cleavage, purity and softness of the flake graphite especially adapt it for use as a lubricant. The high electro-conductivity of the mineral also gives it value for certain electrical supplies.

The use of graphite in the manufacture of pencils is probably both its oldest and best-known application, yet the percentage of the mineral used for this purpose is not large, being undoubtedly less than 10 per cent. of the world's production, and one authority even estimates it as low as four per cent. Much flake graphite is also used in the manufacture of paint, stove polish and electrotyper's powder.

According to the statistics of production for 1906, reported by George Otis Smith, of the United States Geological Survey, in an advance chapter from "Mineral Resources of the United States, Calendar Year 1906," an output of crystalline graphite was reported in the states of Pennsylvania, New York and Alabama. The graphite produced in Alabama, Georgia, Michigan, Wisconsin, Colorado, Rhode Island, Nevada and North Carolina has generally been classed as amorphous, but the material shows extreme variations in purity, ranging from the high grade, essentially crystalline graphite of Colorado and Alabama, to the impure graphite schists mined in Georgia.

The production of artificial graphite has steadily increased since 1897, the year of its introduction, and the quantity manufactured in 1906—5,074,757 pounds, valued at \$337,204—is the largest yet reported. The use of this product is being rapidly extended and it probably comes into competition with the natural graphite in many lines of manufacture, especially in the electrical trade, but for some purposes it seems certain that nothing can take the place of the natural mineral, and the production of crystalline graphite will doubtless continue to increase.—*Western Electrician*.

DIXON'S graphite publications sent free upon request.



DIXON AT THE NEW YORK AUTO SHOWS.

The Dixon Company was represented at both of the New York Auto Shows, and the illustration that occurs on this page shows the booth occupied at Madison Square Garden. The booth at the Grand Central Palace was quite similarly arranged. The full line of graphite lubricants for the motor car was exhibited as well as crucibles and commutator brushes. These last two products were included for the benefit of the manufacturer, though the brushes also made appeal to the owners of electric cars.

The special feature of the Dixon booth at each show was the gear cases that were running in Dixon's Graphite Greases for enclosed transmissions. The Dixon Company was indebted to both the Haynes and Mitchell Companies for the gear cases on exhibition. The Haynes transmission was lubricated with Dixon's Graphite Wood Grease, No. 688. This is a special lubricant—a high grade graphite grease containing a certain proportion of finely ground cedar fiber—which, because of its constituent character, gives long and efficient service. The Mitchell transmission was running in Dixon's No. 677, which is a lighter graphite grease without wood fiber.

Hundreds of visitors stopped at the Dixon exhibit and were impressed by the quiet manner of the gears' running.

Such a demonstration is as near to actual working conditions as it is possible to get, and this no doubt partially accounts for the lively interest shown. Not infrequently some one would pause and say: "I know all about Dixon's Graphite and wouldn't be without it." Others who had not yet tried any of Dixon's Graphite Lubricants for the automobile asked for information on the subject.

The Dixon representatives observed that a growing interest was manifested in Dixon products. This was probably due to the growing use of the motor car, a better understanding of its care and maintenance and last but not least, the inherent value of Dixon's Graphite Lubricants themselves. The representatives in charge of the Dixon booth at both shows were L. H. Snyder, H. H. Bush, and I. L. Levison.

EVERY LETTER IN ALPHABET.

A *Boston Globe* correspondent gives the following sentences, each of which contains all the letters of the alphabet:

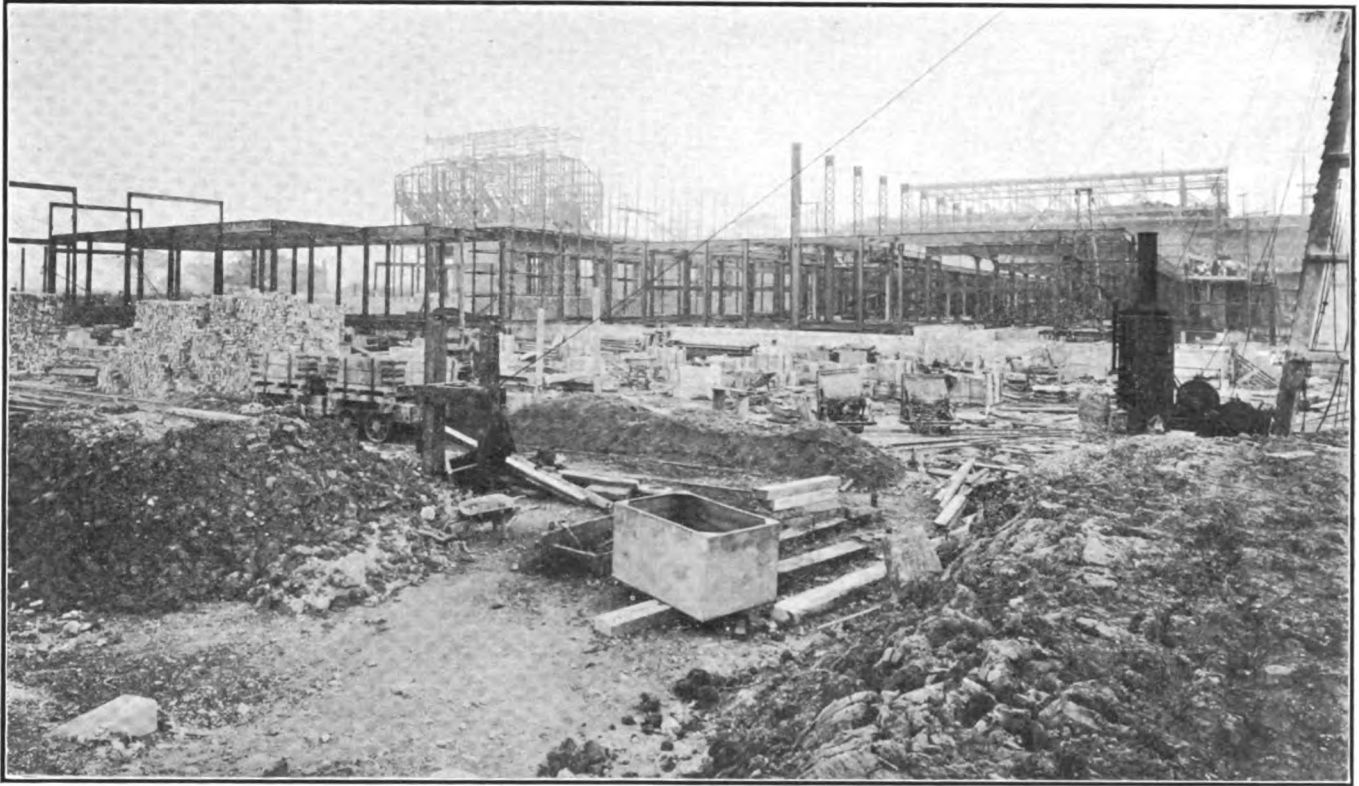
The quick brown fox jumps over the lazy dog.

Pack my box with five dozen liquor jugs.

John quickly extemporized five town bags.

Frowzy quacks vex, jump and blight.

Quack! glad zephyrs, wave my javelin box.



NEW WORKS OF THE WALL PAPER MANUFACTURERS, Ltd., AT GREENHITHE, KENT, ENG.

Taken from the side of the River Thames. In the distance on the left hand side is seen the skeleton of the coal bunkers above the position of the boiler house. Constructed under the direction of Messrs. Joseph H. Wallace Co., of New York, whose Resident Engineer in charge of the construction is Mr. J. S. Sickman. The steelwork which is supplied by Messrs. Redpath, Brown & Co., Ltd., of Greenwich, England, is protected with Dixon's Silica-Graphite Paint.



(ANOTHER VIEW.)

NEW WORKS OF THE WALL PAPER MANUFACTURERS, Ltd., AT GREENHITHE, KENT, ENG.

This illustration shows a closer view of the skeleton of the coal bunkers and works. The River Thames can be seen beyond the cranes on the river bank. Constructed under the direction of Messrs. Joseph H. Wallace Co., of New York, whose Resident Engineer in charge of the construction is Mr. J. S. Sickman. The steelwork which is supplied by Messrs. Redpath, Brown & Co., Ltd., of Greenwich, England, is protected with Dixon's Silica-Graphite Paint.

(The following is reproduced verbatim from the 1907 Christmas Number of the *New York Times*.)

WORLD AUTO RACERS COULD USE GRAPHITE.

Experts Say it May be Easily Substituted for Oil for Lubrication. Superior in Extreme Cold. Alaskan Hunters are Able to Fire Their Guns After Coating Them with Graphite.

Automobilists continued to discuss with unabated interest yesterday the proposed motor run from this city to Paris.

The oil problem, in view of the announcement by the Standard Oil Company that it is endeavoring to provide a lubricating oil that will withstand the severe cold of the arctic regions without freezing, attracted general attention. It was pointed out by several motorists that the use of graphite would obviate many of the difficulties of the free use of oil.

Special preparations of motor graphite are now made, and are in very general use both as a lubricant in itself and as an aid to the standard oils in securing greater efficiency. Piston rings and cylinders are lubricated by the use of motor graphite mixed in the crank case in the proportion of about one teaspoonful to a pint of oil, and a paste made from fine flake graphite is successfully used as a lubricant when rubbed on the cams, slides, gears, differentials, and all moving parts.

"Graphite for lubricating purposes is nothing new," said L. H. Snyder, manager of the lubricating department of the Joseph Dixon Crucible Company, in Jersey City yesterday. "Graphite is practically unaffected by any degree of heat or cold. It will hold on the heated portions where oil will not, and conversely it will give equally good satisfaction in extreme cold. Used in small proportions in the crank case it actually stimulates the lubricating value of the oil."

The superiority of graphite over oil in cold temperatures was illustrated by Mr. Snyder from a letter received a short time ago from Will D. Reiley, a Dawson engineer and hunter. Mr. Reiley stated that one cold day when the thermometer was 72 degrees below zero he was hunting caribou, and when about to fire his Winchester rifle found that the oil on the lock and firing pin was frozen solid and would not set the cartridge off. Mr. Reiley took his gun apart, thawed out the oil, and coated all the parts with Dixon's fine flake graphite.

"I went out every day after that, and never once did my gun refuse to work," he added. "Graphite is now one of the most important things in a hunter's outfit around these parts."

"In some of the discussions on the effect of severe cold upon oil," said Mr. Snyder, "I have seen it stated that, because it is often impossible to fire a gun, the automobilists who may endeavor to travel through Alaska in cold weather will find it almost impossible to use lubricating oil successfully in their cars. But if graphite works so well with a rifle, possessing no elements of heat as are engendered by the moving parts of a machine, there seems to be no question that it would be equally serviceable for motor car use."

"We have already demonstrated our ability to furnish auto grease for severe conditions of cold," continued Mr. Snyder. "We have been supplying this graphite grease for air brake purposes in the cold regions of Northwestern Canada for some time. Formerly there was difficulty under the old lubricating methods of opening and closing the angle cock, but with graphite grease this is entirely obviated, and in

temperatures 20 degrees below zero trains in Northwestern Canada have no difficulty with their lubricating systems."

Supt. MacNaughton of the Dixon lubricating department pointed out the fact that all oils brought down to a point where they will withstand a low temperature, lose a large proportion of their lubricating value. "For automobile use in cold climates," he explained, "it would probably mean employing a larger amount of oil than would be ordinarily the case, but with the proper distribution of graphite among the working parts this original loss in the lubricating effect of the oil would be more than counteracted, in addition to giving the oil greater power to withstand the cold."

IMPORTANCE OF GRAPHITE AROUND A POWER PLANT.

The following was clipped from a recent issue of *The Practical Engineer*. It includes the actual experience of an engineer with graphite about the engine room.

EDITOR *The Practical Engineer*:

I have met a great many engineers who do not seem to realize the importance of graphite as a lubricant around the power plant. In my plant graphite is considered to be of as great importance as oil. I have a can in which I mix one part graphite and three parts valve oil, and in replacing the manhole and handhole plates, after washing the boilers, the gaskets are painted with it. This makes a tight joint and a gasket will last a long time when painted with this mixture.

At one time we had considerable difficulty in getting the packing to hold on the plungers of our outside packed feed pumps, when pumping against a pressure of 150 pounds steam, with water at 208 F. The square flax we were using would get hard and had to be screwed very tight to hold, causing excessive friction, and would only last a few days, although the plungers were in good shape. I bought some sectional rings of standard steam packing and put them in with a liberal supply of graphite and oil, and our packing trouble with the plungers was ended. The valve-stems, rods and plungers on the pumps, and the valve stems and rods on the engine are swabbed three or four times a day with the graphite and valve oil mixture, and they have that glossy finish that all engineers like to see.

Graphite is also a benefit to scored rods, as it helps to fill up the scores and lubricate the packing, thus making it wear longer. As often as convenient the cylinder heads on my engines are removed and the walls given a coat of graphite and oil. The valve seats, wrist and crank pins and main bearings also get their share and I have found the graphite and oil especially beneficial when used on warm bearings. In the making of pipe joints it will be found to be better than lead, as it does not cause the gasket to stick, but will make a steam-tight joint.

Care should be exercised not to use too much of the graphite at a time, as it will bake and fill the oil grooves on the bearings; but if used with oil it will not do this but will fill in the small holes and form a good bearing.

Elyria, Ohio.

—J. C. H.

DIXON'S graphite publications sent free upon request.

DIXON'S GRAPHITE FOR AUTO GEARS.

The following letter which comes to us, we are reproducing verbatim with the consent of Mr. Andrew P. Williams.

MOBILE, ALA., October 4, 1907.

Joseph Dixon Crucible Co.,
Jersey City, N. J.

Dear Sirs:—

Your letter of September 20th to hand and will say that you would have heard from me long before now but I was waiting to get the chance to look into our gears.

The graphite which you so generously sent me last March or April, was immediately placed in the gears and all bearings of our auto and launch. We immediately noticed that our auto transmission was practically noiseless and that our car rolled 50% farther when power was shut off. We have used the machine continuously since that time and upon examination of the gears we find them positively as good as new, showing *no* wear.

We also made a star performance with our 30 ft. launch by the aid of your good graphite. We started out from here (Mobile, Ala.) with a new boat which had not been limbered up and by the aid of graphite throughout working parts, we ran to Biloxi, Miss., which is about 78 miles in a day and towed a large yawl boat. We will never again be without graphite, and Dixon's at that.

We have converted a number of our motoring friends to the use of your goods, and will continue the good work. We have recently bought your graphite of a Mobile dealer and find that two of them now carry stocks of it. If, however, we ever find that they haven't any special kind we want we will have you ship to us direct.

Thanking you for your generosity and assuring you of our appreciation of same, we beg to remain,

Yours very truly

ANDREW P. WILLIAMS.

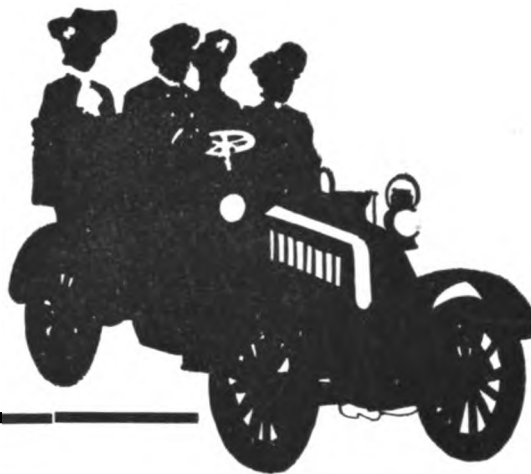
CUTTING STEEL WITH YARN.

What the drop of water does to the hardest stone is only a circumstance to what a thread of yarn can accomplish. Major McClaughry, warden of the Federal prison at Fort Leavenworth, once found a prisoner who was supposed to be pounding stone working away at one of the bars to an outside window. The man finally admitted what he was doing and was induced to give a demonstration. A grating of the same description was placed in his cell, says *Popular Mechanics*, and a guard stationed over him to exact the proof of the statement. With the limestone dust and silicate from the stone pile, the yarn from his sock and a little water this man cut the bessemer steel bar in 18 working hours. With some fine emery, a chalk line and two wooden handholds to save his fingers he made the other clean cut of the bar in five hours, proving the matter to the guard's satisfaction.

—*Building Trades Bulletin.*

TURNER made thirty thousand drawings before he achieved his "Slave Ship"—and immortality.

Gibbon worked twenty years on his "Decline and [Fall] of the Roman Empire."



CAR COMFORT

Regardless of the cost of your car you cannot get solid "car comfort" unless the motor and all moving parts are kept free from the evils of friction. Friction, as you know, resists motion, causes squealing and groaning, and in advance stages ruins the expensive bearing surfaces and puts your car in the repair shop.

Dixon's Motor Graphite

the "positive principle" lubricant, is an infallible preventative of friction. It puts a thin, smooth, tough, durable coating on the microscopically rough friction surfaces that makes cutting and seizing impossible. In cylinders it increases compression, in gears it lessens noise and wear, on bearings it prevents running hot. Keep a can handy.

Various flake graphite lubricants for special parts of the car are prepared by the Dixon Company. Information and samples are gladly sent to those interested.

Joseph Dixon Crucible Co.

Jersey City, N. J.



QUESTIONS AND ANSWERS ON AUTOMOBILE LUBRICATION.

The following questions and answers will prove interesting and instructive generally and will especially show for just what parts of the automobile Dixon's Graphite Lubricants for automobiles are best adapted.

Q. Should one lubricant be used throughout the whole automobile system?

A. No. For best results a lubricant should be adapted for the service required and in an automobile there are many lubricating problems that have to be solved. No one lubricant would even in a small way answer for the various bearing parts on the automobile and even the engines of different automobiles will require different lubricating oils. An oil suitable for an air-cooled engine would not be at all suitable for a water-cooled engine, and even in water-cooled engines different kinds of oils are required. It is likewise true in the lubricants used in gear cases; conditions differ and different lubricants are required. Oils and oils alone are used in engines, while both oils and greases are used for lubricating other parts of the automobile; sometimes certain parts require an oil and again a grease will give better satisfaction.

Q. Is grease better than oil for transmission gears?

A. Grease is not better than oil for all types of transmission gears. Some gears are so designed that the lubrication of the bearings depends entirely upon the splash system. However, some one of Dixon's Graphite Greases may be advantageously used in any transmission case where any grease can be used.

The advantages of a grease over an oil are:

1st. It is hard to keep oil in a case as it will easily work out and form a very dirty mess, often leaving the bearings without any lubrication at all.

2nd. Oil, because of its lighter nature cannot as effectively protect the bearing parts from the particles of metal and grit with which it becomes charged, as the more heavily-bodied grease can and does.

3rd. Grease forms a collar on the shaft and prevents foreign substances from working into the gear case and bearings.

4th. Grease makes the gears run more quietly in that a cushiony effect is obtained.

5th. Gears are not so likely to become chipped in going into mesh when grease is used as when oil is used.

6th. Greases do not become as viscous as oil and especially after the oil has been used for a long time without changing.

7th. The value of a grease properly charged with Dixon's Ticonderoga Flake Graphite is many times greater than without the graphite. The finely pulverized flake graphite fills up the minute irregularities which are known to exist in the metal surfaces forming a veneer-like coating of marvelous smoothness, and instead of having actual metallic contact you have graphite to graphite contact.

8th. Gears packed with Dixon's Graphite Grease go into mesh far easier than when grease or oil is used in which no graphite is employed. Not only this, but they are not likely to become chipped when going into mesh, as the graphite forms a cushion to the edges as well as a lubricant.

Q. Why is grease better than oil for differential gears?

A. For reasons similar to the reasons given why grease

should be used for gears in transmission cases and for the additional reason that where Dixon's Graphite Greases are used in differentials, the common well known drip of oil from the end of the axles on to the tires, will be fully eliminated.

Where oil is used in differential gears, the oil will find its way out and drip from the ends of the axles in spite of the washers put in place by the manufacturers.

Q. Where may Dixon's Motor Graphite best be used?

A. Generally speaking, Dixon's Motor Graphite may be most successfully used wherever there is friction of any kind. As a help to cylinder lubrication it may be used in the cylinder by removing one of the plates at the side of the crank case if there is such a plate, or it may be squirted into the cylinders by means of a "bug gun" through the spark plug openings, or it may be squirted by the same "bug gun" down the vent pipe into the crank case, or it may be mixed with cylinder oil and introduced from the vent pipe into the crank case. It will largely increase both lubrication and compression. Care should, however, be taken not to use more than a teaspoonful to the quart of oil, as only a small quantity is needed at any time.

Our attention has been called to the fact that Dixon's Motor Graphite has been very successfully used through the regular force feed pump, but this is a practise which we would not recommend, as the small pipes are liable to become clogged especially where they are of any length or have turns and bends.

For side chains, graphite may be applied dry or mixed with gasoline and oil or with oil alone. If the chains are treated with a mixture of gasoline and graphite mixed to a thick paste and rubbed in well, the chains will run dry, but smoothly and quietly, and dust and dirt will not adhere. Treatment in this manner should be given for every 250 miles, according to conditions of road.

For the leaves of springs, nothing is better than an occasional treatment of a thick paste made of graphite and oil and when introduced under the leaves, it prevents the squeak so commonly heard and so annoying. Where the leaves are tight, then the graphite is often better introduced by means of kerosene, being mixed with kerosene so as to form a thin mixture.

Where springs are not fully elliptic, but are hung by shackles, the shackle bars should be occasionally treated to a dose of graphite and oil. Such treatment will prevent squeaking and insure smooth and easy action, may even save a broken spring.

A mixture of Dixon's Motor Graphite with oil should also be applied to spark plug threads, although an even better preparation is the regular Dixon's Graphite Pipe-Joint Compound, which is put up in 4 oz. tubes and other sizes of packages.

Dixon's Motor Graphite should also be used on the inside of tire shoes and rubbed on the rims of wheels to prevent the tire shoe from becoming rusted to the wheel rim.

In many machines there are drawers in which tools and notions are kept, and a little graphite rubbed on the slides of these drawers will insure the easy opening and closing of the same.

Dixon's Motor Graphite rubbed on all metal surfaces, even when rubbed on in dry form, so thoroughly coats the metal surfaces that they are prevented from rusting.

Engine cylinders and all metal parts should be occasionally treated to a good thorough rubbing in of Dixon's Motor Graphite, especially where the engine is subject to dampness from rain or from the water used in washing the automobile by hose. Whenever the automobile is to stand for any length of time without use, all rusting will be prevented if the bearing parts are thoroughly rubbed with graphite.

Graphite mixed with oil has also been successfully used in polishing all brass and nickel work.

Q. When should Dixon's Special Transmission Grease No. 677 be used?

A. In gear boxes when there are grease holes leading to the bearings, it may be used in any gear boxes where grease is used.

Q. What makes this grease especially valuable?

A. It is a very light grease easily fed through a grease gun and (most planetary gears have no provision made for introducing the lubricant other than a small hole in the casing) will cling to the gears without being thrown away, will not leak out of the gear box and leave the gears dry.

Q. Where should Dixon's No. 688 Special Graphite Wood Fibre Grease be used.

A. In any gear cases where there are no oil holes or grease holes likely to be clogged up. Can be used where there are roller bearings or ball bearings, especially good for noisy gears, the wood fibre forming a cushion for the gears to mesh with. It is put up in a stiff form and is to be thinned to the desired consistency by the addition of some light machine oil; the grease soon loses its granular appearance and becomes like a soft jelly; it may be used in planetary gears and can be fed through a grease gun (if the grease is thinned) by putting into the gear case direct, the oil should be put in first as it works up better, and the 688 will not settle to the bottom of the case. This grease should not be used where there is any danger of its working into the crank case as the wood fibre will cause trouble.

Q. What is the best grease for grease cups?

A. We make Cup Greases in six degrees of hardness and where a cup grease of very high melting point is wanted. Example—around the engine our 676 may be used; however, for best all around summer use would recommend our No. 3 Cup Grease, while for very cold winter weather our No. 2 Cup Grease be used.

Q. Best lubricant for chains?

A. The very best lubricant is our Motor Chain Compound, which is to be melted up; the chain having been previously cleaned should be dipped into the molten mixture, in this manner grease and graphite get to all parts of the chain, thus insuring perfect lubrication. Hang the chain up and when dry rub off the superfluous grease. It is not always convenient to take the chain off and dip; a very good substitute is found in our Graphitoleo which comes in 8 oz. tubes (also cans) and is squeezed out as needed. Graphitoleo can be used on valve faces, valve stems, small open gears, cams, packing universal joints, etc.

Q. How often should the grease be changed in the gear boxes?

A. This is a question which will depend entirely upon the condition of the gears, the manner in which they are used, whether or not the gear box is tight; so we can give no

definite answer other than to say that our Graphite Grease will last much longer than the average grease and the bearings will be in much better shape, showing no sign of cutting, pitting, or corrosion.

THE VILLAGE BLACKSMITH.

Under a spreading chestnut tree

The village smithy stands.

The smith, a mighty man is he * * *

—Now prepared to meet demands

For prompt repairs to auto cranks,

Magnetos, sparkers, chains, hoods, tanks;

New parts for every known machine;

Full stock of oil, graphite, carbid, gasolene—

* * * And the muscles of his brawny arms

Are strong as iron bands.

His hair is crisp, and black, and long,

His face is like the tan;

His brow is wet with honest sweat,

He earns whate'er he can * * *

—Vulcanizing, riveting, brazing, repairing,

Of radiator, clutch, cylinder bearing;

Inner tubes for sale, cement, patches, tires,

Battery coils, spark plugs, coils, wires—

* * * And looks the whole world in the face,

For he owes not any man.

Toiling—rejoicing—sorrowing,

Onward through life he goes;

Each morning sees some task begin,

Each evening sees it close. * * *

—Tires recovered, relined, retreaded; sectional and tube patching; aluminum brazing; repairs to radiators, mud guards, sprocket cones; overhauling and adjustment of every description; on hand day, night and Sundays (residence third house to right, behind schoolhouse); prices reasonable; all work guaranteed; patronage of automobilists resp. invited—

* * * Something attempted, something done,

Has earned a night's repose.—*Life*.

NOT A BOX CAR.

Patrick, lately over, was working in the yards of a railroad. One day he happened to be in the yard office when the force was out. The telephone rang very vigorously several times, and he at last decided it ought to be answered. He walked over to the instrument, took down the receiver, and put his mouth to the transmitter, just as he had seen others do.

"Hillo!" he called.

"Hello!" answered the voice at the other end of the line. "Is this eigh-six-one-five-nine?"

"Aw, g'wan! Phat d'ye think Oi am—a box car?"

—*International Railway Journal*.

OLD Noah Webster put thirty-six years of solid work on end to produce his dictionary. In thirty-six years he wrote only that one book. But that one will be remembered.

Cyrus Field crossed the ocean fifty times to lay a single cable.

TESTS OF GRAPHITE ON BALL BEARINGS.

There have from time to time appeared articles in the various trade papers condemning the use of graphite as a lubricant for ball bearings. The reason these articles have appeared, we presume, is because some users have had unpleasant experiences with inferior grades of graphite. Professor Goss has made some extensive tests with Dixon's Ticonderoga Flake Graphite as a lubricant for ball bearings combined with kerosene oil, lard oil and vaseline, and found that friction losses were very much reduced and the bearings made to carry a heavier load when Dixon's Ticonderoga Flake Graphite was used. The following are extracts from Professor Goss' report.

The general appearance of the machine used in making the test is shown by Figure 1, and the test ball bearing is shown

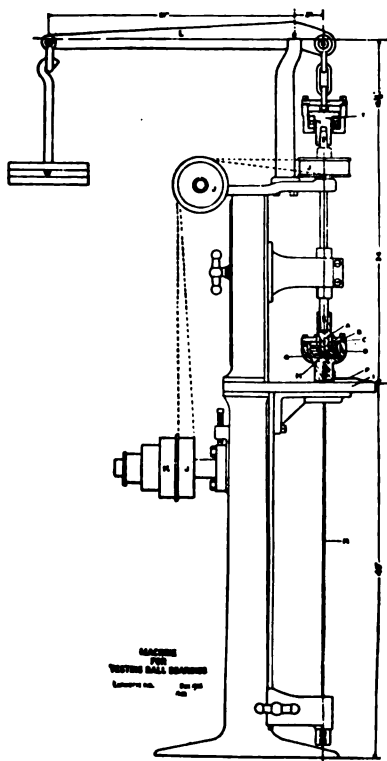


FIG. 1.

at B. It has the form of a grooved ball-thrust bearing and was made by the Standard Roller Bearing Company of Philadelphia, Pa. It consists of two hardened steel rings, each having a groove or race to receive the balls. The bearing fits a $1\frac{5}{8}$ " shaft and contains 23 $\frac{7}{8}$ " balls. The lower race is caused to revolve through the action of the machine, while the upper one is fixed in position. The entire bearing is enclosed in the cup D. The cup is held in place by the wire H which serves to oppose its tendency to turn, and also to receive the tensional stresses due to the normal loading of the bearing.

The lower race B rests upon the casting A which is attached to the spindle of the machine. By means of the cone pulley K and the pulley JJJ the spindle may be driven at three different speeds. The pressure imposed upon the balls is regulated by means of weights applied to the lever arm L, which is of such length that each ten pounds applied to the weightpan W gives a reaction of 90 pounds along the line of the spindle through the bearing T, and thence to the test ball

bearing. The bearing T is similar in all respects to the test bearing, except that it is of greater capacity.

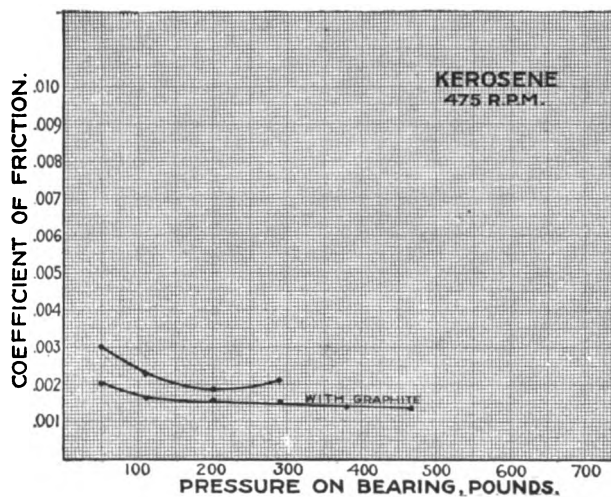


FIG. 2.

It has been shown by previous experimentation that graphite can be efficiently applied as a lubricant when mixed in small quantities with oil or grease. Following this practise, six series of tests were run; the lubricant employed upon the test ball bearing being, respectively, kerosene, a mixture by weight of 96% kerosene and 4% graphite; lard oil, a mixture by weight of 96% lard oil and 4% graphite; vaseline, a mixture by weight of 96% vaseline and 4% graphite; the graphite in all cases was Dixon's Ticonderoga Flake Graphite. Figures 2, 3 and 4 show graphically the results obtained. Where the curves are not labelled, the results are without graphite.

As the result of these tests Professor Goss says in part that the following general conclusions may be drawn:

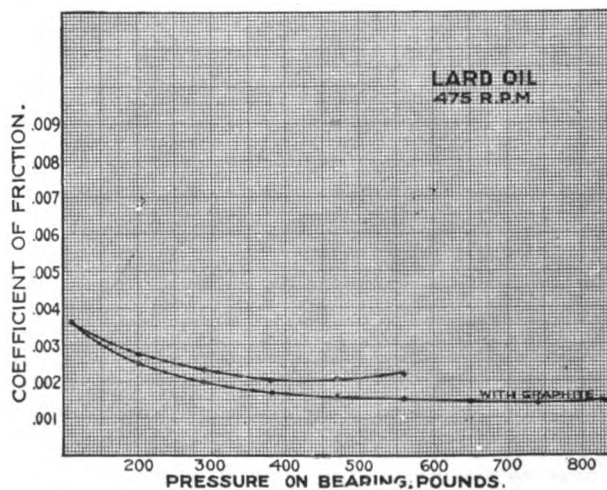


FIG. 3.

"A combination of graphite and lard oil makes up a lubricating mixture which, when applied to ball bearings, will accomplish everything which lard oil alone will do and which at the same time will give a lower frictional resistance of the bearing and permit a large increase in the load which it may be made to carry.

"An oil as light as kerosene, when intermixed with graphite, will be converted into an effective lubricant for ball bearings when operated under light or medium heavy pressure.

"Even so viscous a lubricant as vaseline will better perform a given service in the lubrication of ball bearings when supplemented by small amounts of graphite. The bearing

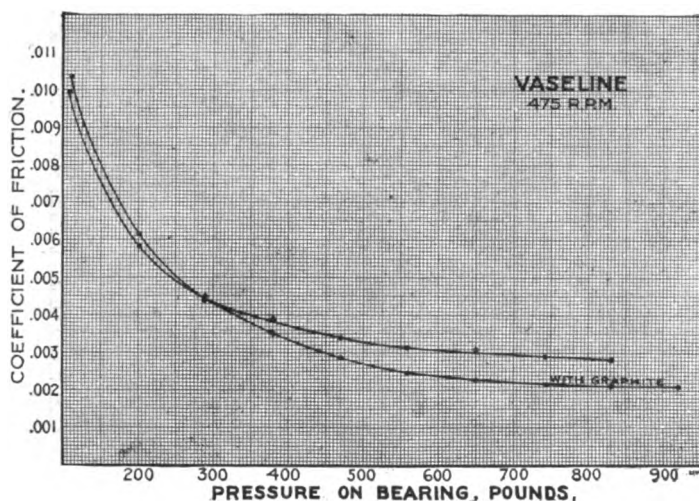


FIG. 4.

to which the mixture is applied will work with less frictional resistance and will carry a heavier load than when vaseline alone is used.

"The admixture of graphite with either a liquid or a viscous lubricant serves both to reduce the friction and to increase the possible load which a bearing thus lubricated can be made to carry."

A COMMUNICATION FROM ONE OF DIXON'S MANY RAILROAD FRIENDS.

The following letter, which comes to us from Mr. S. D. Wright, Road Foreman of Engines of one of the large Southern Roads, shows the high esteem in which Dixon's Ticonderoga Flake Graphite is held by the practical railroad man.

COLUMBUS, Ga., Nov. 14, '07.

Joseph Dixon Crucible Co.,
Jersey City, N. J.

Gentlemen:—I have been running locomotives for the past nineteen years and since 1893 I have been Traveling Engineer for the above named Road.

During this time I have been a constant user of Dixon's Flake Graphite. It is an ideal remedy for hot pins and boxes and I have never had a hot driving box that I could not cure with graphite. My method is to remove the waste from top of box, exposing the oil holes, and then pour dry graphite into the oil holes and push it well up into the cavity of the brass with a wire or straw, pour in a little valve oil and replace the waste. This operation may have to be repeated in bad cases, but as soon as the graphite works its way in between the brass and journal the box will begin to cool. I have never known it to fail if applied as stated.

I recommended this to an engineer an on adjoining division some time ago who had been worried daily with a chronic hot driving box. He applied the remedy as directed and when I met him a week later he wanted to give me a box of cigars for the suggestion. By giving occasional doses of graphite and valve oil to cylinders and valves through the relief valves, while drifting, I was always able to get a

heavy train up hill and make better time and my reverse lever always handled easy. After valves have been faced and cylinders rebored, there is nothing better than graphite mixed with valve oil to put a good sleek surface on. I have removed cylinder heads after a few hundred miles with a generous use of graphite, and you could see the tools work, but you could not feel 'em. The walls were as smooth as glass. I am breaking in a lot of heavy freight engines now and use about one pound of Dixon's Flake to each engine with excellent results.

I have no axe to grind, but thought it may gratify you to know that your goods satisfy me.

Very truly yours,

S. D. WRIGHT, R. F. E.

HOT PINS, CAUSES AND CURES.

A recent issue of the *Southern Engineer* contained two articles concerning the lubrication of crank and crosshead pins. Both articles were signed H. Jahnke, who is evidently an engineer of experience. His recipes for the cooling of hot pins will prove valuable, we believe, to all that may experience similar difficulties. Extracts from both articles follow:

"Referring to the letter of R. Manly Orr, in the March issue, in regard to a hot crank pin:

"I do not believe that cooling the brasses with water had anything to do with their heating afterwards, for if the brasses had been taken out at once, smoothed and refitted shortly after they had run hot, and then covered with graphite mixed with cylinder oil, the trouble would not have occurred.

"The heating of a crank or crosshead pin is not always due to keying the boxes too tight. One cause of hot pins, especially on engines in which the boxes have been used a long time is, that the top edges of the box become sharp and scrape the oil from the pin. This may not be noticed at the time, but some day the pin will run hot and the engineer will wonder why it did not get hot before, because the same amount of oil may be used as formerly. Then more oil is fed, but this does not remedy the trouble. Perhaps the box is washed out, keyed up loosely, but with no better success.

"The remedy consists in taking out the box and scraping the sharp edge with a file, and if the box is cut, the grooves should be removed also. If necessary, recut the oil grooves. Then mix graphite and oil and smear on the pin and box. In most cases, this will cure the trouble. We have made a practise of covering all pins and boxes with graphite mixed with cylinder oil, before putting them back in place. We do this with new shaft bearings and when babbitting a bearing. This has saved us from many hot bearings.

"When a pin runs hot after everything has been done to remedy it, such as feeding graphite and more oil and loosening the key, etc., the box should be removed. The cause may be due to some part of the engine being out of line or the oil grooves in the boxes may be clogged, or worn out. In other cases the oil may be at fault. Changing the oil has often prevented a bearing from getting hot. It is good practise to put a little graphite mixed with cylinder oil into a bearing after keying up and before starting the engine".

DIXON'S graphite publications sent free upon request.

Graphite

VOL. X.

FEBURARY, 1908.

No. 2.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

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COMMENTS.

It is said that a thorough way of cauterizing a snake bite or other poisonous wound, is to cover the wound with powder and touch it off. This was done in the case of a rattlesnake bite, and next morning nothing more serious than a stiff leg resulted. It will be even more effective if a tourniquet is applied immediately after the bite.

Dixon's GRAPHITE for August contained an article entitled "Annealing of Crucibles." The article was prepared and written by Mr. Jonathan Bartley, Superintendent of the Crucible Works of the Joseph Dixon Crucible Company, and has been considered by experts in crucible matters one of the very best articles ever written on that subject. Words of approval have come from crucible manufacturers as well as from crucible users.

Later on it will appear in circular form with the article on "Crucible Tongs" by Dudley A. Johnson, which was printed in October GRAPHITE. The Dixon Company is fortunate to have such able writers so closely associated with the company. Other articles from these gentlemen will appear in later issues of GRAPHITE.

The Dixon clocks vary greatly. When the Dixon clock at Jersey City points at 12 noon, it is 5 p. m. at its London Office, and 9 a. m. at its San Francisco Branch,—a difference of nearly an entire working day between London and 'Frisco. The difference in the clock between the Jersey office and the cedar mill at Florida is one hour, being 11 a. m. when noon at Jersey City. The same difference exists between the Dixon Chicago and St. Louis office and Jersey City. At the Dixon Graphite mines at Ticonderoga the clock is always kept ahead of Father Time one half hour, as this balances the day better for the workmen, permitting them to cease work in the afternoon a half hour earlier which gives them during the Spring, Summer and Fall seasons more time to look after their gardens.

THIEVES COST MORE THAN FIRES.

Few persons, says *The New York Times*, realize the magnitude of the annual loss to New Yorkers by burglary and theft. To illustrate how serious this loss is the burglary insurance interests call attention to the fact that while the loss for 8,424

fires in this city in a single year has reached the total of \$9,816,000, there were in the same period 35,289 robberies, with \$15,875,000 as the total value of the property stolen. The property recovered in these cases, or "salvage," as the insurance men call it, was a negligible quantity, ranging in some companies from less than 1 per cent. to not more than 5 in the most fortunate.

Bad as the situation in New York appears to be, however, New Yorkers may find some consolation in the agreement of the insurance managers that Chicago is even worse. It takes twenty-three companies out there to handle the business, and last year they paid out \$332,234 in losses, or 41.75 per cent., which added to the 60 per cent. allowed for commissions and expenses shows a total of 101.75 per cent. to come out of the total premiums received, \$795,836.

"Chicago has always been notoriously the paradise of thieves and robbers," said Manager Hart of the Metropolitan Security Company, "but now New York is about as bad."

GRAPHITE NOT A NON-CONDUCTOR.

There appeared an article in the *Electric Traction Weekly* concerning the lubrication of trolley wheels without graphite. The article is interesting and probably correct with the exception that the makers argue that "graphite is a non-conductor, offering great resistance to the current."

As a matter of fact, graphite is a very excellent conductor of electricity, and is used for that purpose by electrotypers. Our readers also well know that graphite commutator brushes have found great favor with electricians, quite rapidly superseding all other forms of brushes.

It would seem as though for trolley wheels graphite might be most advantageously employed. No better lubricant is obtainable, it doesn't "offer great resistance to the current" and it is not affected by heat or cold, and trolley wheels are subject to the heat of Summer and to the intense cold of Winter.

GRAPHITE A GREAT HELP.

Mr. Chas. F. Clark in *The Engineer* says:

"Third question I can answer most favorably. Graphite is a great help to the lubrication of steam valves and cylinders when used with good judgment. It fills the minute niches in the iron and produces a very smooth bearing surface. It also fills in the crevices around the joints and gaskets, keeping them tight."

DIXON's graphite publications sent free upon request.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

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AN OLD-TIMER.

As many readers of GRAPHITE know, the founder of the Joseph Dixon Crucible Company was Joseph Dixon, who began business in Salem, Mass., in 1827. Not long ago we received a letter from Salem from a long-time customer of the Dixon Company, in which he said:

"I enclose herewith check in settlement of account," and added, "I remember hearing my father often speak of Mr. Joseph Dixon. Mr. Dixon was working in the immediate vicinity of the building occupied by my father, and not long since destroyed by fire.

"Mr. Dixon was a very sociable man, and being a friend of my father's, was often in the foundry. At that early time it was the practise in foundries to do the melting with charcoal. My father heard of some anthracite coal being brought into town, and he procured a small quantity. He put a few pieces in the furnace, but they concluded that the anthracite coal only heated red hot and didn't possess any heat of its own.

However, my father didn't give it up with this trial, but one day put in half a bushel with the result that they had a most intense heat that caused the Dutch crucibles then in use to become soft and collapse.

"It was at this crisis that Mr. Dixon set himself to work to make a crucible that would resist the heat of anthracite coal, and he did his experimenting in my father's furnaces, with, I believe, very satisfactory results, although I suppose that the methods then employed would be considered rather crude at this time.

"Mr. Dixon was a very genial man, and his genius and practical knowledge was recognized by all of his townsmen.

"One little incident I have heard father relate which shows how universal Mr. Dixon's talent was. A neighbor who was an apothecary came in one day, and seeing Mr. Dixon there he said, 'I wonder if you can't help me out, I have just been making some cordial, but it is thick and I can't clear it; what shall I do?' Mr. Dixon replied at once, 'Take a barrel and make some holes in the bottom, fill one third full of sand, and filter your cordial through that;' which the apothecary did and the result was his cordial was perfectly cleared.

"I thank you for your kind invitation to visit the Dixon plant, and I shall be pleased to avail myself of it."

ALCOHOL NON-FREEZING COOLING SOLUTION.

The Industrial Alcohol Company, 100 William Street, New York City, offer their "Pyro" brand of denatured alcohol as an effective anti-freezing cooling fluid for automobile gasoline engines. The following table shows the freezing points of solutions of various strengths:

2 pints of alcohol per gallon	freezes at 0°
2 1/2 pints of alcohol per gallon	freezes at 10° below.
3 pints of alcohol per gallon	freezes at 20° below.
4 pints of alcohol per gallon	freezes at 38° below.

—Horseless Age.

A MILE WITH ME!

O who will walk a mile with me
Along life's merry way?
A comrade blithe and full of glee
Who dares to laugh out loud and free,
And let his frolic fancy play,
Like a happy child, through the flowers gay
That fill the field and fringe the way
Where he walks a mile with me.

And who will walk a mile with me
Along life's weary way?
A friend whose heart has eyes to see
The stars shine out o'er the darkening lea,
And the quiet rest at the end o' the day'—
A friend who knows, and dares to say
The brave, sweet words that cheer the way
Where he walks a mile with me.

With such a comrade, such a friend,
I fain would walk till journeys end.
Through summer sunshine, winter rain,
And then?—Farewell, we shall meet again.

—HENRY VAN DYKE.

FACT BLINDNESS CONCERNING GRAPHITE.

In a recent number of *Everybody's Magazine* President Roosevelt wrote concerning "nature fakirs" and used during the course of the article the term "fact blindness." Appropos of both the subject of the President's article and the term referred to, we would speak concerning some statements that have been appearing in the advertising pages of some of the trade papers.

In one advertisement we note a test to ascertain the purity of greases. It is stated in this connection that if any "sediment" remains after the test "you had better steer clear of that brand." Among the various "sediments" mentioned graphite is included, and the ad. goes on to say: "It will gum the bearings and cause 'hot boxes', besides increasing the friction load on your engine."

Such statements do not affect users of Dixon's Pure Flake Graphite, for they know that Dixon's will *not* gum, will *not* cause hot boxes but *will* cure them, will *not* increase the friction load but *will* lessen it. These statements do, however, exhibit blindness to facts—facts well recognized by competent practical men, and supported by expert scientific authorities.

In another advertisement, exploiting amorphous graphite, the manufacturer says concerning his product: "..... *not flake*, but air-floated and gritless." The "blindness" in this statement is more subtle, the suggestion is delicate rather than positive. The natural inference, however, is that flake graphite is *not* air-floated and *not* gritless. Now, as a matter of fact, Dixon's Ticonderoga Flake Graphite *is* air-floated and *is* gritless. We have not emphasized the air-floated feature for many years because it is our opinion that the user of graphite does not care so much *how* the graphite is prepared as long as it *gives the right service*; though we believe we were the originators of the phrase "air-floated."

It is a comparatively easy matter to separate flake graphite from the foreign matter with which it is associated in nature; while it is well known that, due to its intimate combination with natural impurities, amorphous graphite is separated with great difficulty. Perhaps the writer of the matter referred to was so impressed with the difficulties in the way of securing pure amorphous graphite that he felt called upon to say something about it.

As far as grit is concerned, it is obvious that any lubricant containing grit cannot be successfully employed. That Dixon's Flake Graphite has been in continuous use for years is sufficient evidence of its true value, fact blind writers to the contrary notwithstanding.

DISTINGUISHING THE SMITHS.

"Fate tried to conceal him by naming him Smith," says Oliver Wendell Holmes of the author of "My Country, 'Tis of Thee." Fortune tried the same trick with a great many inhabitants of Long Island, but was foiled by native ingenuity. Mr. Furman in his "Antiquities" tells of the way by which various Smith families were designated.

There were many Smiths among the early settlers of the island, and it soon became necessary to adopt some means of distinguishing them.

The "Rock" Smiths were so called because their ancestor

built his first house against a huge boulder, which still remains in the highway of his town. The grandfather of the "Blue" Smiths always wore a blue cloth coat. The first settler of the "Tangier" Smith branch was an English governor of Tangier during the reign of Charles II., who came to this country in 1686.

The "Bull" Smiths are the most numerous of the name. It is said there are more than one thousand male descendants of this branch. Their common ancestor won his title from having once used a bull in harness instead of a horse. The "Weight" Smiths originally owned the only set of weights and scales in the neighborhood, and all the farmers of the country round resorted to them for the purpose of weighing.

These various appellations became firmly fixed as family names. When an inquiry was made of man, woman or child concerning the Smiths the answer was invariably:

"Which do you mean, the Rock, Blue, Bull, Tangier or the Weight Smiths?"

DIXON'S GRAPHITE AXLE GREASE

Makes a Large Saving in Babbitt Metal.

The Assistant Master Mechanic of a large steel plant reports that for the month of August a saving of \$700.00 was made in Babbitt Metal, in the mill where Dixon's Graphite Grease was used on the bearings.

The durability of Dixon's Graphite Axle Grease does not consist in the grease, although the grease used in the manufacture of Dixon's Graphite Axle Grease is one of the very best lubricating greases in the market. The endurance of Dixon's Graphite Axle Grease lies in the Ticonderoga Flake Graphite used in the grease. The graphite is a tough flake of great endurance. It fills up the inequalities of the bearing surfaces, enables the heat to pass away readily, and at the same time prevents friction.

WHY THE ACTOR WAS SORE.

Says the San Francisco *Argonaut*:

An actor without funds managed in some way to get a second-class ticket on a line of steamers running between Seattle and San Francisco.

The voyage between these two points consumed the better part of three days, and in view of the fact that his finances were at a low ebb he solved the question in this way: The first day out he slept all day to keep from eating and remained up all night to keep from sleeping. The second day he took physical culture exercises. On the third day he could not stand the strain any longer and went down in the dining room and ordered the best meal on board the boat. While eating this meal he could see in his mind's eye a picture of a cell in the bastille in San Francisco.

After finishing his meal he said to the waiter, "How much do I owe you?"

"Nothing," replied the waiter, "your meals are included in your ticket."—*Birmingham-Age Herald*.

THOSE USE it who never used it before,
And those who always used it, now use it the more,—
Dixon's Ticonderoga Flake Graphite.

KEEPING THE TONGS IN SHAPE.

BY DUDLEY A. JOHNSON,

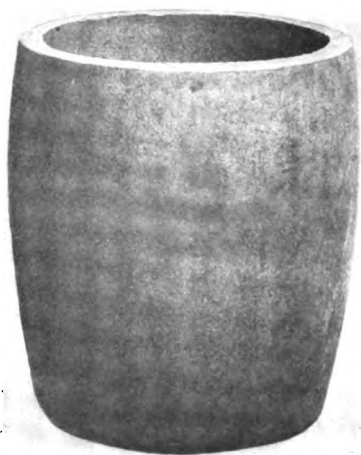
Chicago Office of the Joseph Dixon Crucible Co.

In our October issue of GRAPHITE we called attention to the imperative necessity of having the tongs right and fitting properly when *new*, in order to prolong the life of the crucible. Tongs remain in shape only a short time, even with the most careful handling. They get red hot at frequent intervals and warp and work out of shape, so that tongs that were perfect last month may be sadly needing attention now.

What is to be done? The tongs must be sent out to the blacksmith and a crucible sent along on which to fit them. There is the expense of cartage both ways, the blacksmith's bill and the loss of time, and like as not they are poorly fitted and not much better when they come back than when they were sent out. The crucible is more or less damaged by the transportation and handling, and all in all we find that many prefer to get along and take a chance with the old tongs until at last the pots begin to go to pieces in half the usual time and a big jump in the crucible cost forces immediate attention to the matter.

Why not be your own blacksmith and mend your own tongs without ever having to send them out of the shop?

We submit herewith a picture of an iron crucible, which is intended to be used as an anvil. From the bilge, or widest part, down it is identical in shape with the graphite crucible; from the bilge upward it is made enough larger than the crucible so that, when the tongs are perfectly fitted to the iron pot, there will be sufficient space so there is no possible chance of squeezing when placed on the graphite crucible. The bottom of this iron pot has been cut off to reduce the weight, but it is long enough to accommodate the full length of the tongs.



These iron pots are made to match the various sizes of crucibles, and the one in the picture is a No. 50. One will last for a life-time, and each foundry should be equipped with an iron crucible corresponding with the sizes of graphite crucibles in use. It then only becomes necessary to put the tongs in the furnace, heat them red hot, clamp them on the iron pot just the same as they would be clamped on to a graphite crucible, and with a sledge hammer they can be made to fit perfectly in an incredibly short space of time.

It is next to impossible for a blacksmith to shape a pair of tongs on an anvil so that they perfectly fit the crucible. He must place them on the pot, examine carefully all over, then hammer where he thinks it is needed, place them back on the pot again, and, after innumerable trials of this sort he gets what he considers a sufficiently good fit and lets it go at that. It will be apparent to the casual observer that this iron anvil, which is just the proper shape, is sure to bring the right results if the tongs are hammered down until they touch at every point.

Inasmuch as there is a considerable outlay involved in get-



ting the patterns ready for an iron crucible of this sort, and as the foundry-man only needs one of each pattern, we have arranged with E. R. Klemm, 103 W. Monroe Street, Chicago, and he has had patterns made for the standard sizes of Dixon's Crucibles and is ready to fill orders immediately upon their receipt. We have no financial interest in the matter, but will be pleased to forward any orders that are entrusted to us, as a matter of accommodation. His prices for the sizes most in use are as follows:

No. 40.	\$4.50
No. 50.	5.00
No. 60.	5.50

No. 70.	6.00
No. 80.	6.50
No. 90.	7.25
No. 100.	8.00
No. 150.	10.00

F. O. B. cars, Chicago. Other sizes in proportion.

Quite a number of foundries have already availed themselves of this opportunity and we have yet to hear the first note of dissatisfaction with the operation of this iron crucible.

We trust our suggestion will prove of benefit to our friends in the brass trade.

RULES FOR CALCULATING SPEED OF PULLEYS.

Problem I. The diameter of the driver and driven being given, to find the number of revolutions of the driven:

Rule.—Multiply the diameter of the driver by its number of revolutions, and divide the product by the diameter of the driven; the quotient will be the number of revolutions.

Problem II. The diameter and revolutions of the driver being given, to find the diameter of the driven, that shall make any given number of revolutions in the same time:

Rule.—Multiply the diameter of the driver by its number of revolutions, and divide the product by the number of revolutions of the driven; the quotient will be the diameter.

Problem III. To ascertain the size of the driver:

Rule.—Multiply the diameter of the driven by the number of revolutions you wish to make, and divide the product by the revolutions of the driver; the quotient will be the size of the driver.

The above rules are practically correct. Though, owing to the slip, elasticity, and thickness of the belt, the circumference of the driven seldom runs as fast as the driver.

For thorough preservation of the belt use Dixon's Traction Belt Dressing which comes in paste form only. It is absolutely without an equal for leather belts. We make an excellent bar dressing for those who prefer the convenience of such a dressing.

"PASSAGES FROM THE PAST."

The Duke of Argyll's Memories.—References to Ticonderoga.

Through the courtesy of "Brayshaws," Machinery Agents, General Engineer Stores, etc., Stoke-on-Trent, England, who are agents in Stoke-on-Trent for the sale of Dixon's Graphite Products, we have received copy of the *Staffordshire Sentinel*, which contains a review of "Passages from the Past" by his Grace the Duke of Argyll. This publication takes prominent rank among the most notable literary publications of the year 1907. His Grace is already well known to the public as an author, perhaps better as the Marquis of Lorne, under which title he became the husband of her Royal Highness Princess Louise, and was Governor-General of Canada from 1878 to 1883.

Our own attention has been called to one of the stories in the book wherein our own Ticonderoga, famous in many historical events as well as for the graphite mines of the Joseph Dixon Crucible Company, is mentioned. The story contains excellent material for the telepathists and psychical researchers. It concerns Mr. Campbell of Inverawe (1755).

This gentleman had given shelter and promised protection to a fugitive. The man proved to be the murderer of Inverawe's own brother; but even so he could not break his word. In the night the brother appeared to him, pronouncing slowly and sadly these words, "Inverawe, blood for blood." Thrice this vision appeared at his bedside, and the ghost (like Cæsar's) ended his last warning with the mysterious words, "We shall meet at Ticonderoga."

Shortly afterwards he was sent for service abroad. He took part in storming a place called St. Louis, the Indian name for which was Ticonderoga. With his dying breath Inverawe said, "This place is Ticonderoga and not St. Louis; I know it, for I have seen my brother." But this is part only of the weird legend; for on that very day Sir R. Hart, a physician of the castle, saw near Inverawe in a mirage, the reflection of Highland troops storming some place, and on the same day two Misses Campbell of Ederein also saw a bright vision in the sky, and "among the faces of those they saw fall, Inverawe and his son."

LOCOMOTIVE TALK.

Said the engine, "I drink only water, and still
I could get on a toot if required.
I can tender my own resignation at will,
But I never can go till I'm fired.

"I get hot when I'm coaled, but I never can shirk
Nor be switched from my purpose so active;
I rail not at fate, but I puff my own work
And es-steam it as something at-track-tive.

"I have only one eye, which may seem rather queer,
Till you think, if you haven't already,
That engines like I am have only one ear—
The engineer, sober and steady.

"My train rushes on like an arrow swift sped,
Till I put on my brakes and I slack her;
I chew, chew, whenever I coax her ahead,
And likewise I chew, chew, to back 'er."

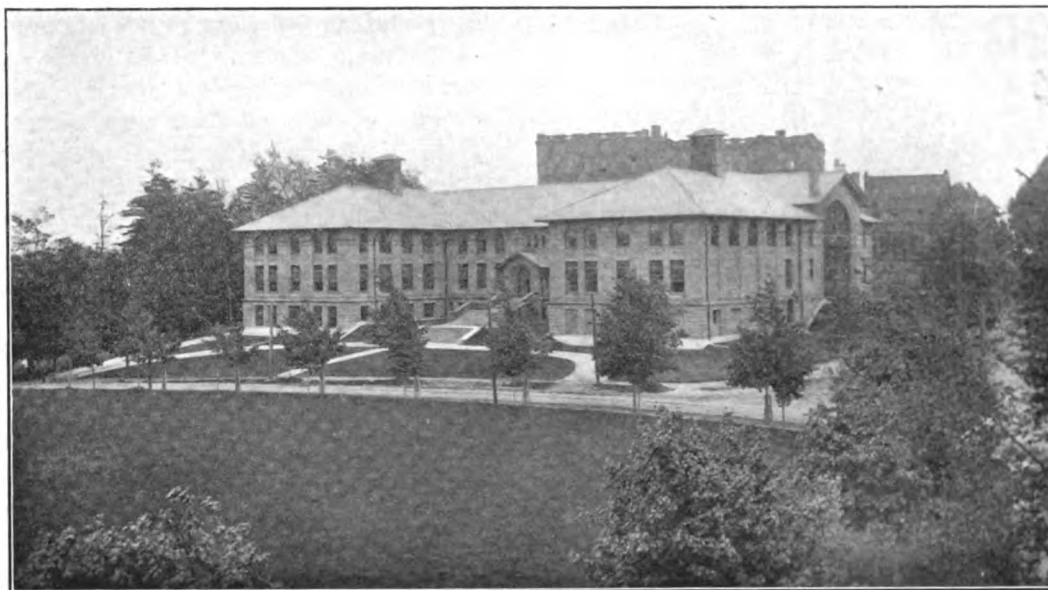
—NIXON WATERMAN, in *S. F. Employers' Magazine*.

GRAPHITE STOVE POLISH AS A FURBISHER.

For a motor which is beginning to look old and weather worn, nothing is better than a coat of good graphite stove polish, put on with water and brushed well into the surface. It gives a good firm color and does not burn off, in addition to which it prevents the creeping of rust. The same treatment should be applied to the exhaust pipe and muffler whenever they begin to grow red or grey. The greatest advantage of the stove blacking is that it may be applied to a rough surface even better than a smooth one, and that it requires little time to apply it, and no time for it to set or dry. It is best when put on while the motor is just warm enough so that the hand can be laid upon it comfortably.

—*The Bicycling World*.

If Dixon's Stove Polish is not easily obtained, use Dixon's Motor Graphite mixed to a thick paste with gasoline and a very little oil, preferably linseed oil, although any oil will do.



ELECTRICAL ENGINEERING LABORATORY, WORCESTER POLYTECHNIC INSTITUTE.

THE NEW ELECTRICAL BUILDING OF THE WORCESTER POLYTECHNIC INSTITUTE.

The accompanying illustrations show the exterior and a section of the interior of the new Electrical Engineering Building of the Worcester Polytechnic Institute, Worcester, Mass., of which Prof. Harold B. Smith, M. E., is director. Messrs. Peabody & Stearns, of Boston, were the architects and Professor A. W. French, of the Department of Civil Engineering at the Institute, the consulting engineer and superintendent of construction.

Besides the recitation rooms, laboratories, battery rooms and storage space usually provided, the building contains a lecture room fully equipped for experimental demonstration lectures; a standards and research laboratory; a department reading room and library; an electrical engineering design room, well equipped and admirably lighted; a photometric laboratory; a telephone laboratory; a laboratory for the study of high potentials phenomena and the problems of high potential power transmission, for which the department has already unusual facilities, but to which considerable addition will be made; a general laboratory 200 feet long and 55 feet wide, containing, with its galleries, a floor area of 19,400 square feet, and a volume of about 400,000 cubic feet.

This constitutes what is undoubtedly the largest electrical engineering laboratory in the world devoted to educational uses.

The laboratory is served by a 10-ton electrical traveling crane, covering the entire central portion between the galleries. The galleries are served by 2-ton trolley hoists, covering their entire length.

The power for the laboratory is supplied at 2200 volts by underground cables from the power laboratory of the Institute, where have recently been installed three service units, which are in charge of the Electrical Engineering Department. These units are supplied with steam from four boilers, aggregating 560 H. P. nominally, but capable of considerable overload. These units consist of direct connected 2 phase, 60 cycle generators and engines of 75, 175 and 350 H. P. respectively, and are controlled by a very complete switch-board of eleven

panels, which will permit separation of service and experimental loads. The equivalent of nearly 2000 incandescent lamps and 25 induction motors, aggregating 350 H. P. of motors and lights are connected, not including experimental equipment. The circuits of this system, because of their varied application, illustrate most of the methods of electric power transmission and distribution, and possess many features of educational value besides their primary function of service to the Institute.

The large general electrical engineering laboratory contains some fifty generators and motors, including examples of all the principal commercial types and a number which have features designed especially for experimental purposes. In capacity, these machines vary from a 300 H. P. motor, 200 kw. generator and 150 kw. transformers down to machines of 1 kw. or less. The aggregate capacity of equipment for the laboratory is about 1500 kw., or 2000 H. P.

The transformer equipment numbers over 40 and includes the regular commercial types and several of special design. Among the latter are one giving 500,000 volts and two others of 200,000 volts and of 100 kw. capacity each. There are four transformers of 150 kw. capacity with taps for two or three phase operation. There are six auto transformers with taps for multi-potentials and polyphase work.

Partly of standard equipment and partly of special design is the electric railway apparatus. Two tracks, connecting with the tracks of the local railway company and in that way with the suburban and interurban railways of New England, enter the laboratory on space covered by the traveling crane. One of these tracks, for purposes of inspection, is for its entire length over a pit. The second track enters to a testing plant, where a car or locomotive under test rests and runs on wheels carried by axles which transmit the power from the car to special electric absorption dynamometers and fly-wheels. The pedestals carrying these axles may be moved to accommodate cars of any truck or wheel base, and the fly-wheels are so arranged that their weight may be changed to correctly imitate the inertia of cars of any weight within wide limits. The car is held in place over the supporting wheels by an end post, which will transmit the drawbar pull to a traction



ELECTRICAL ENGINEERING BUILDING, WORCESTER POLYTECHNIC INSTITUTE.

dyamometer. A very complete set of recording instruments measures the power consumption, speed, tractive effort, etc., of the car under test. A complete, double truck, four motor interurban car is a portion of the equipment. This car is fully equipped with special apparatus and will be available for testing work, either upon the stand in the laboratory, or on lines of electric railways outside. Besides the equipment mounted on the car, the laboratory contains various types of motors, braking, controlling, lighting, heating and signalling apparatus, mounted in such a way that their operation may be studied and tests made.

The structural steel work of this building is protected with Dixon's Silica-Graphite Paint.

SOME USES FOR FLAKE GRAPHITE ABOUT THE PRINT SHOP.

The following matter describing a few of the uses for flake graphite about the printery, is clipped from the August issue of the *Inland Printer*. We would point out that the author specifies *flake* graphite. The article appeared under the title of "Printers' Engineering" and the author, Harley Barnes, says by way of introduction:

"Reentering the printing trade after a term of years spent at other mechanical employment, the writer was most impressed with the dearth of instructive reference information available on the subjects of construction and operation of printing machinery."

Mr. Barnes is further quoted verbatim concerning his references to flake graphite:

By melting vaseline and then adding and stirring in as much flake graphite as the vaseline is capable of carrying, a valuable lubricant can be made for the pinions and gear teeth in the driving mechanism of cylinder press beds, the various cams, gears and open slide bearings on gas and gaso-

line engines, the platen slides on the frames of Universal presses, and other forms of open bearings.

In the numerous joints about engines and pipe fittings where sheet rubber or some of the patent composition sheet packings are used, a little graphite rubbed over the gaskets will prevent them from sticking to the surfaces with which they are in contact. Where metallic packing is not available for use in the piston rod and valve stem stuffing-boxes of steam engines, a fairly good substitute may be had by braiding up hemp packing into gaskets and thoroughly saturating them with flake graphite.

Probably the most bothersome of all stuffing-boxes is the one on the ignition valve stem of some of those makes of gas engines which use an ignition timing valve in connection with a hot-tube system of ignition. By using asbestos wicking for gaskets and thoroughly saturating it with flake graphite, these valve stems can be kept tight and at the same time subject to very little friction.

The amateur mistake of using stove-polish in gaskets or on bearings simply because there is plumbago in it should be avoided, for the stove-polish has clay in it which is often full of grit and better adapted to grinding than lubricating purposes.

Where the vaseline and graphite mixture is used on gears or slide bearings it should be cleaned off at intervals, the surfaces thoroughly wiped and a fresh application of the lubricant made. The persistent continuation of this plan will result in the rubbing surfaces so treated taking on a polish marvelously smooth and very hard, and the dangers of cut bearings, undue wear and shutdowns on account of hot boxes become very remote. Also where frictional surfaces have taken on a high degree of polish less power is consumed, and the oiling can be done at longer intervals.

DIXON'S graphite publications sent free upon request.

LUCK,—VITOSOPHY.

We clip the following from *Bassel's Scrap Book*:

"What is Luck? Is there an intelligence behind that guides and directs it? We were sitting in a game of 'Preference' a few nights ago. All were equally good players, but all the luck ran to one hand and the lady who was so favored held the high cards at every deal. We shuffled and cut in every way but the course of luck could not be turned. At last we proposed an exchange of hands before looking at the deal. We did so and secured one of the gilt edged hands. From that moment the luck left our lady friend and came to us. What was it? There was method in it. It was not skill, for there were cards which commanded results irrespective of skill."

Let us look up authorities and see what wiser men than we are have to say about luck. Addison says: "I never knew an early-rising, hard-working, prudent man, careful of his earnings, and strictly honest, who complained of bad luck."

There is a great deal of nonsense uttered about hard work and its unfailing result of success. It is not the hardest workers in this world that are the most successful. There are a lot of round pegs in square holes that work as hard if not harder than do the pegs which fit perfectly. So fully is the fact of misplaced talent recognized that a new word has been given to the language. Vitosophy, according to Dr. Windsor, is the science of extracting a round peg from a square hole and inserting it in a hole of the same general conformation. The ladies of the Physiological Institute have jotted that point down in their note books. Luck comes in to put a man in a place where he fits, and hard work does the rest. Vitosophy would seem to be a specific for bad luck. There's a lot of wasted energy that boils no pot.

Emerson says: "Shallow men believe in luck." Dryden says: "Lucky men are favorites of Heaven." An Arabian proverb reads: "Pitch a lucky man into the Nile, and he will come up with fish in his mouth." Now let us turn to the Bible. We find in Ecclesiastes, 9-11: "The race is not to the swift nor the battle to the strong, neither yet bread to the wise, nor yet riches to men of understanding, nor yet favor to men of skill; but time and chance happeneth to them all."

We must recognize luck as a force. Hard work and all that sort of thing produce the great results of the world, but luck comes in once in a while to turn the course of things for good or ill. Account for it? Who can do so? There's a lot of things we don't know.

SOME ODD NAMES IN JERSEY.

F. B. Lee, State Historian, Collected Queer Facts for Jamestown Fair.

Special to the New York Times.

Historian Frank B. Lee, State Historian, has announced the results of his gathering of many curious facts regarding New Jersey, which he obtained for the State exhibit at Jamestown. Regarding the derivation of the names of New Jersey's twenty-one counties, Mr. Lee learned:

Bergen is from the Dutch, "the hills." Passaic is Indian for "where the trails fork." Salem is pure Hebrew, "the peaceful." Counties taking their names from individuals are Cape May, from Cornelius May, a navigator; Camden, from

the first Earl of Camden; Cumberland, from the Duke of Cumberland; Hudson, of course from Henry Hudson; Hunterdon, from Gov. Andrew Hunter of the Colony of New Jersey; Morris, from Gov. Lewis Morris; Mercer from Gen. Hugh Mercer of Virginia; Warren from Gen. Joseph Warren of Massachusetts.

Names from English towns and counties are Burlington, Monmouth, Somerset, Essex, Middlesex, Sussex, and Gloucester.

Names from geographical characteristics are Atlantic and Ocean, and from public sentiment, Union.

The following are from Mr. Lee's collection of odd names of places in New Jersey: Baptistown, Bargaintown, Blue Ball, Bivalve, Blue Anchor, Brass Castle, Chairville, Cheesequake, Chrome, Cream Ridge, Deerfield, Double Trouble, Feebletown, Green Tree, Hackle Barney, Hell's Neck, Helmeta, Hen's Foot, Hickory Tree, Hohokus, Jerico, Little Silver, Manumuskin, Moe, Ong's Hat, Parsipany, Pimple Hill, Piscatoway, Pluckemin, Plum Sack, Seacaucus, Shiloh, Shongum, Squandum, Succasunna, Towaco, Wickatuck, and Zion.

GREASE THE SPRING BLADES.

"I have been troubled for some time with mysterious squeaks in the car, which seemed to come from nowhere, and at last, after considerable searching, I located them in the springs. Accordingly, one wet day this Spring (they were all wet, so it doesn't matter which) I jacked the car up, so as to take the weight off the springs, and separated the blades with a fine chisel, while I worked grease between the blades with an old knife. The effect was instantaneous and the cure complete, the springs promptly becoming, if anything, a shade too lively. Before considering the job completed, I should have given the edges a coat of paint just where the blades join, so as to prevent the water getting in between the leaves again."

The above is from *Motor Print* and bears out what the Dixon Company have often said on the subject of automobile and carriage springs, with the single exception that in this instance no mention is made of graphite. If Dixon's Graphite had been added to the grease the cure would have been for all time as Dixon's Flake Graphite has a strong mechanical affinity for metal surfaces, and for smoothness and endurance is without an equal.

ALLIGATOR SKIN "FURS."

We learn from the daily papers that a consignment of alligator skins, worth about \$1,800, were stolen or lost from an express wagon here in Jersey City, and it will interest our Florida readers and those familiar with alligator skins to know that "the driver of the express wagon had maintained a careful watch over the furs while crossing the ferry," and it seems that after the driver got on the Jersey side he discovered that the "furs" had been stolen, but whether the "furs" had been taken by thieves on the boat, or after he landed, he was unable to tell.

TOUGH ON THE BOYS.

Washington's Birthday,	Saturday.
Decoration Day,	Saturday.
The Glorious Fourth,	Saturday.

FLAKE GRAPHITE AS A LUBRICANT.

The following letters, which are typical of many, come to us and show in what high esteem our lubricants and literature are held.

PHILADELPHIA, PA., 12/15/'07.

*Joseph Dixon Crucible Co.,
Jersey City, N. J.*

Gentlemen:—Will you please send me your booklet copy, "Graphite as a Lubricant." I have been using Dixon's Pure Flake Graphite for twenty years and I would not be without a can of it at any time. A teaspoonful pumped into the steam line every day keeps the valves working very smoothly.

"I have taken down the steam pipe, which was put up five years ago, and had no trouble getting it apart as the joints had Dixon's Graphite on them. I use your graphite on manhole gaskets and have only put a new one on once in two years. If all engineers would only use graphite it would save them a lot of trouble.

"Awaiting to hear from you, I am,

Yours truly,

(Signed) L. C. FLECK, Philadelphia, Pa."

Later Mr. Fleck writes us: "If I were to tell you all the uses I make of your flake graphite, it would fill a book."

The following letter shows the value of knowing how to use graphite as a lubricant. Mr. H. H—— of Beaumont, Texas, writes us on August 9, '07, as follows:—

"I received your booklet on "How to Use Graphite" and it certainly shows you how to use it. I put up a new engine 16" x 20" about seven years ago. It was sold to run at 150 R. P. M., but the best we could get out of it was 135 R. P. M., and we had to keep a stream of water running on the bearings. I tried your graphite and it made it worse, so we just let it run with the water for seven years.

"When I saw your ad of the book on graphite, I sent for it and I took a trip to Jennings, La. That is where the engine is and tried your graphite according to your directions. Well, to cut it short, the engine is running cool without water and on about one-half the oil and making 160 R. P. M. without a sound.

"Thanking you for your kindness and hoping to learn more from you, I am,

H. H——."

A marine engineer writes us as follows: "Kindly send me one of your booklets, "Graphite as a Lubricant," which I saw advertised in the *National Engineer*. I am particularly interested in graphite lubrication as applied to steam cylinders where no oil is used.

"Our marine engine is 18" x 42" x 24", 125 R. P. M., 150 pounds boiler pressure. We use no oil, either in the cylinders or in the cylinders of any of the auxiliaries, but I have introduced dry graphite into the cylinders of an 18" x 14" x 14" Worthington Duplex Pump, pumping against 140 pounds pressure with what seems to be good results. Any further information on this subject which you can give me, will be much appreciated.

"I am of the opinion that the majority of engineers fail to fully realize the many advantages which are to be had from the proper use of graphite. Some years ago I helped to erect and was chief engineer of the plant having the largest cent

rifugal pump in the United States (incidentally, this pump was the second largest in the world.) The capacity of this pump is 45,000 gallons per minute, speed 275 R. P. M., the engine was of 300 H. P. As we run condensing, I used no cylinder oil, nothing but graphite. At the end of the season, which lasts about five months, I made a thorough examination of the cylinders and found the walls looking like a polished boot.

"The important point which I am leading up to, however, is that the tubes and interior of the shells of the boilers looked as though they had been coated with stove blacking and were so "slick" that no scale or foreign substance could possibly get a hold on them, neither were there indications of pitting.

"I was about a year ago on a boat with a set of triple expansion engines with direct-acting, steam-reversing gear, which could not move the links with less than 100 pounds of steam. The introduction of dry graphite into the steam pipe by means of an ordinary cylinder oil cup placed thereon removed this trouble, so that in about two weeks 20 pounds pressure did that which had before required 100 pounds."

DOESN'T WANT TO BE BOTHERED.

The Dixon Company is always glad to receive all pamphlets and circulars relating to any mechanical appliance, or anything that may be of use to the Dixon Company in any way, shape or form, but there are people who are not pleased to receive things of this kind, as an evidence of which we append the following letter received by us.

"We beg to call your attention to the fact that sometime ago you promised not to bother us with any more circulars, but the same was received a few days ago.

"We will be obliged if you will see that our name is removed from your list."

We removed his name, and wish him joy and gladness and peace in the darkness he desires to have pulled around him.

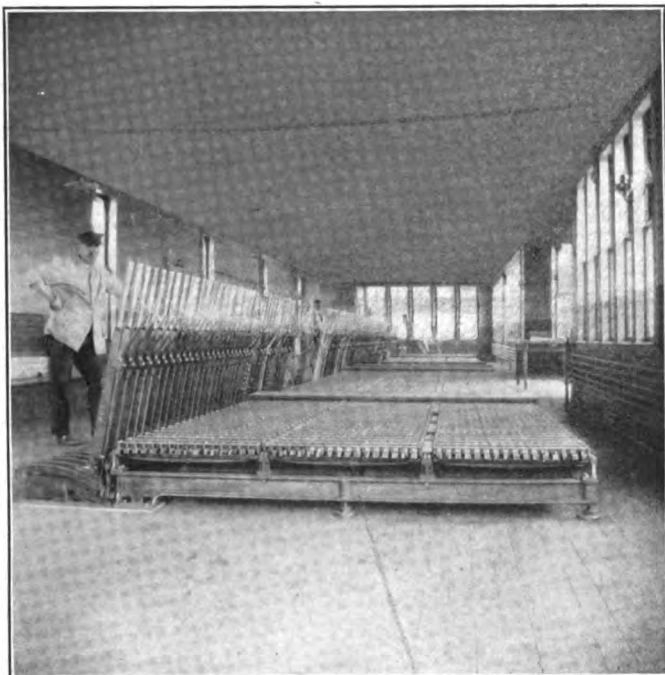
DAY'S LENGTH AT DIFFERENT POINTS.

We hear a good deal said about long and short days, and the following gives some idea of the longest and shortest days at distant points of the globe: At Wanderbus, in Norway, the day lasts from May 21 to July 22 without interruption, and at Spitzbergen the longest day lasts three and a half months. At Tornea in Finland the longest day has twenty-one hours and a half and the shortest two and a half. At St. Petersburg and Tobolsk the longest has nineteen and the shortest five hours. At Stockholm and Upsala the longest day has eighteen and a half hours. At Hamburg, Dantzic and Stettin the longest day has seventeen hours and the shortest seven. At Berlin and London the longest day has sixteen and a half hours and the shortest about eight.

—*Marine Journal*.

WHERE WAS FATHER?

"Go to father," she said, when I asked her to wed,
And she knew that I knew that her father was dead;
And she knew that I knew what a life he had led;
And she knew that I knew what she meant when she said,
"Go to father."



INTERLOCKING PLANT, NEW YORK, NEW HAVEN & HARTFORD RAILROAD.

The illustration of the interior of one of the largest mechanical interlocking plants in New England will doubtless prove of interest to railway men. It is situated near the South Terminal Station, Boston, Mass., and contains 172 lever machines. Every lever moves a pipe and every pipe is protected with Dixon's Silica-Graphite Paint, Color Black.

Those familiar with railway service will readily appreciate the importance of having these pipes move with as little friction as possible. Some of these pipes extend for a considerable distance to signals and switches.

Careful tests in protective coatings have pointed out the fact that Dixon's Silica-Graphite Paint is superior to other paints for this purpose. The paint not only insures the pipes running easily, but the tough coating of graphite furnishes excellent protection against existing conditions which are frequently in such cases unusually severe.

HAD GRAPHITE AND HANDKERCHIEFS.

Queer Combination of Articles Found on Man Charged with Theft.

Michael Passemonto, whose picture is in the rogues' gallery and who has been on parole in custody of Probation Officer Butler, was arrested yesterday morning by Patrolman Pangborn of the Fourth Precinct police station with two boxes of graphite and fifteen boxes of fine linen handkerchiefs in his possession. Just before his arrest, it is charged, Passemonto had been in a Lehigh Valley box car, which he broke into and from which he took the property.

Passemonto has served two terms on charges of receiving stolen property. He was sent back to jail on the ground of having violated his parole.—*Jersey City Evening Journal*.

MR. GROUND HOG—HIS DAY, FEB. 2.

If the ground hog sees his shadder
When he peereth forth today,
Please keep on your winter woolies
Till about the first of May.

WHAT'S THE USE?

Notice that a Chicago physician, after a sixty day test, has demonstrated that a man can live on a diet of bananas and peanuts. The gain by this, the demonstrator claims, is the elimination of servants and cookery and a saving of money, as an outlay of fifteen cents a day suffices.

Sounds good to some, maybe. So much for Chicago.

Now comes Boston to the front announcing the departure hence of an eccentric person at the age of ninety.

He has never traveled beyond the greater Boston district, never joined any kind of organization, never had his life insured, never purchased a ticket for any sort of entertainment, never ate a meal in a hotel or restaurant, did not spend more than \$1 in his entire life for carfare, had not voted for forty years and wore a collar and cravat only on special occasions.

There is nothing about peanuts and bananas in his history, but he left \$1,500,000 behind him.

What's the use?

—THE SNOW MAN in *New York Telegram*.

MERELY BETWEEN FRIENDS.

Rivers, who was making a memorandum in his notebook, muttered something hastily under his breath and threw down his third pencil.

"What's the reason the points of these blamed things break off as soon as you begin to use them?" he said.

"It's because the boy that sharpens them uses a machine," said Brooks, who was hammering away on a first page story.

"What kind of a machine?"

"One that works with a crank."

"Darn anything that works with a crank!"

"Don't say that, dear boy," remonstrated Brooks. "I work with a crank all day long."—*Chicago Tribune*.

LONG DISTANCE RIDERS GROW FAT.

According to the physician who attended the six day races at Madison Square Garden, it is the rule for the riders to put on flesh rather than grow emaciated over the long endurance contest. "The food they eat," he says, "is easily assimilated and they eat nearly all the time. You will frequently see spectators hand them nice things from the boxes. Besides, there is always a nice repast waiting in their dressing room. My experience with the riders is that the best method for training is for them to go on the track without much work, and then ride themselves into condition."

One day a little seven year old who attends the Public School and uses a Dixon pencil had a most interesting lesson in geography.

Next morning the family were very much astonished to see Louis up and dressed two hours before his usual time for getting up.

"Why, Louis, why are you up so early," said the father. "My teacher tells me the earth is round," said the future pride and joy of the German household, and she said, it turns over every day, and I got up to see it turn."

POSTCARDITIS.

If you're going on a journey to the mountains or the coast,
Send a post card.

If you're torn away by duty from the one you love the most,
Send a post card.

If you're aimlessly a-wander through the country here and there,

Seeking pleasure, seeking money, seeking muscle, seeking hair,

Keep a list of all the friends that you have cherished everywhere—

Send a post card.

If you're summoned on a jury, if you must defend a suit,
Send a post card.

If you're touring through the country of the Blackfoot or the Ute,

Send a post card.

If you've got a message write it, drop a line from day to day;
Send a little post card picture if you've not a word to say,
Think of blonde and think of brunette, think of bald and think of gray—

Send a post card.

Though it's gay and you are gloomy, though it's glad and you are grim,

Send a post card.

If you want to tell your enemy just what you think of him,
Send a post card.

You will find the habit growing, till from every side the call
Will respond, though you be dining, dancing, sitting in a hall,
At a funeral or wedding—it's the word that grips them all,
"Send a post card!" —*Post Card Bulletin.*

Now the message that is written is the most important part,
As you know

Whether business is its motive or the words are from the heart,
This is so.

You have purchased post cards pretty and decided what to write,

Then you grab the best hostelry pen—and go distracted quite,
For the pen is gummed, corroded, and the point is out of sight:
Several dashes!

Well, you still are not resourceless, you can use your fountain pen,

Be of cheer!

So you fumble in the pockets where you think it might have been,

Yes, it's here.

You bring it out quite gingerly recalling the last spilling,
The cards shall go by return mail if Providence is willing,
You start to write—and then you find the blooming pen needs filling.

Repeat dashes!

There's a certain cure for troubles like the ones that we have named,

An "Eterno."

'Tis a pencil that's as good as ink and is most justly famed,
The "Eterno."

It is ready when you want it, it's convenient for you too,

There's no fussing and no bother, it has virtues not a few,
And the Dixon people make it, it is good clear through and through—

The "Eterno."

All of us know what a reality "Postcarditis" is; most of us know friends who have an attack; some of us have contracted the disease ourselves. The fad really possesses some creditable features, which no doubt accounts for its sustained popularity.

In this connection we want to point out the value of Dixon's Eterno, the indelible pencil. Pens and ink are often unavailable, at least, good pens and ink. The fountain pen frequently runs dry just at the most inopportune time, or spills over the clothing, and is rarely taken on journeys because it is so easily lost.

Many dislike to use the ordinary pencil for correspondence.

Dixon's Eterno just fills the want for a cheap, convenient, desirable writing material. Though an indelible pencil, it does not write that ugly purple that most of us are familiar with; it is practically black.

Any one who sends Post Cards, or does other "impromptu" writing, should have a half dozen Eternos on hand. Try it anyway and see what you think of it

"PLAY BALL."

(Reprinted from *Manufacturers' Record*,
November 21, 1907.)

Keep cool; don't get excited; don't imagine that present monetary conditions are more than short-lived; don't talk panic; don't think panic; create an atmosphere of faith and optimism wherever you go. Some people lost confidence and that injured credit, and people who ought to be ashamed of such action drew currency out of banks and locked it up. That can't last. Idle money soon burns a hole in your pocket and gets out. Men want their money to work 24 hours a day, Sundays and holidays included. They want interest or income from it. Don't imagine that idle money is going to stay idle. It will soon be coming back into the banks, just as soon as its owners come to their senses and realize that they have been more hysterical than a woman who yells because a poor little mouse happens in her room. The whole scare would be laughable if it were not so serious in its consequences. It's like a nervous man who wakes up suddenly in the night and trembles with fear until he stops to realize that a banging shutter or snow sliding off the roof made the great noise. Then his nerves soon quiet down and he goes peacefully to sleep. The country's nerve were on edge, and everybody was under a little tension because some of our public men, believing that there was a thief in a big crowd, concluded that they would try to kill him by shelling the whole crowd with grape and canister and take the chance of hitting the thief. Some were hurt and a few killed, while dodging cannon balls of this kind had kept the crowd, which included the great American public, so busy that naturally any sudden noise even of a banging shutter started them to running.

In olden cowboy days, when a fast herd of cattle on the plains became panic stricken in a great thunder-storm at night or from any other cause, thousands of frightened, maddened animals would rush headlong at a terrific pace.

Such a stampede must be checked, or hundreds would be trampled to death, or be lost, and so the cowboys riding as none but cowboys can, and risking life in the danger of being trampled to death, would endeavor to turn the leaders and gradually swing the mighty host into a circle. Round and round the cattle would go until finally, tired out by this "swinging around the circle," they quieted down and went peacefully to sleep, apparently wondering why in the world they had been so scared. The American public got scared, started on a wild, mad stampede, and but for the splendid "rounding up" work by cowboys Morgan, Rockefeller, Stillman and others the crowd would have rushed to headlong destruction.

Now that the stampede is over, now that the injury of shelling a whole crowd in order to hit one possible thief has been realized, the American people can resume business operations, get over their scare and do a little thinking. There are just as many people in the United States as there were a month ago, and possibly a few babies more, just as many miles of railroad, just as many bales of cotton and bushels of grain except what Europe had taken and paid for in gold; just as many people to feed and clothe and house. Some of them may eat a little less or wear their old clothes a little longer, but this sad condition will the sooner be righted by a return of sanity. Stop now for one minute to think. Do you see any fewer people in the street cars or on the steam cars, do you see any fewer people moving up and down the streets, do you note any sudden disappearance of any large number of the 85,000,000 people whose wants and activities will keep us busy even if somewhat less than during the strenuous rush of late years, which has been overtaking night and day nearly every productive enterprise in America. These people don't stand still. They are trading one with the other; they are producing something and consuming something; they are making necessary constant enlargements of all our transportation facilities; they are buying and selling; they are sowing and reaping; they are mining and manufacturing, and any idea that the business world is coming to an end and that we must sit around with our thumbs in our mouths and wonder how soon the undertaker will be ready for us is unworthy of men. Dumb beasts in a wild stampede may be excused for their panicky condition when affrighted, but surely men—men who have any backbone and gray matter—are not going to follow their example. On the contrary, they are going to settle down to business, and if grazing is not quite as good on the new prairie as it was on the old, they are going to hustle so hard for their share that they will keep their sides bulging with fatness even if their timid or lazy neighbors refuse to eat. In other words, quit your fears; go to work; if you have any friends who were foolish enough to lose confidence and draw money out of bank, ridicule their folly out of them; take the demagogue or agitator against legitimate business nearest to you by the back of his neck and duck him in a mill pond until he solemnly swears to be as active in building up business interests as he has been tearing them down, or in the absence of such promise leave him there, and then go ahead and in the great drama of business life act well your part; there all the honor lies. "Play Ball."

Moral—Advertise and do business.

Productions of the Dixon Crucible Co.

Dixon's Black-lead Crucibles and Retorts, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

Dixon's Brazing Crucibles, made in several shapes for dip-brazing.

Dixon's Graphite Boxes and Covers, for baking carbons and filaments for electric lighting.

Dixon's Fine Office and Drawing Pencils, unequalled for smooth, tough leads and uniformity of grading.

Dixon's Colored Crayons, in wood or solid. For schools, railroads, editors or factory.

Dixon's Lumber Leads, black or colors; for green or dry lumber.

Dixon's Metal Workers' Crayons.

Dixon's Felt Erasive Rubber, for erasing pencil marks, typewriter work or ink.

Dixon's Carburet of Iron Stove Polish, the old reliable; in cake.

Dixon's Pure Flake Lubricating Graphite, a solid lubricant for all frictional surfaces.

Dixon's Special Graphite No. 635, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

Dixon's Electrotyping Graphite, used by the majority of practical electrotypers of this country.

Dixon's Hatter's Lead, for coloring hat bodies.

Dixon's Plumbago for Shot Polishing.

Dixon's Plumbago for Powder Glazing.

Dixon's Plumbago Foundry Facings.

Dixon's Yacht Plumbago, for lubricating and smoothing bottoms of yachts.

Dixon's Graphite Waterproof Grease, for gears, wire ropes, hoisting chains and general machinery.

Dixon's Graphite Axle Grease, for trucks, wagons, carriages.

Dixon's Graphited Wood Grease, for use on trolley car gears which are enclosed in a gear case.

Dixon's Graphited Oil, for use in all places where the use of a gear grease is impracticable.

Dixon's Graphite Cup Greases, for use in cups or open bearings, on spindles, shafting, etc.

Dixon's Oiled Graphite,

Dixon's Lubricating Compound No. 688, for enclosed gears of electric automobiles.

Dixon's Silica-Graphite Paint, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

Dixon's Graphite Pipe-Joint Compound, for steam, gas and water piping, smearing gaskets and flanges.

Dixon's Automobile and Bicycle Lubricants.

Dixon's Graphitoleo, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

Dixon's Commutator Graphite, will glaze commutator with the finish so much desired by electrical engineers.

Dixon's Graphite for Type Setting Machines.

Dixon's Graphite for Talking Machines.

Dixon's Motor Chain Compound, for transmission chains.

Dixon's Crucible Clay and Graphite Mixture, for lining and repairing fire boxes.

Dixon's Stove Cement, for repairing stove or range lining.

Dixon's Traction Belt Dressing, for leather belts.

Dixon's Solid Belt Dressing, convenient for those who prefer a solid dressing.

Dixon's Graphite Resistance Rods, from one-eighth to one inch diameter; any resistance required.

Dixon's Graphite Brushes, for motors, dynamos and generators.

Dixon's Graphite Products for Electricians.

Special circulars with detailed information sent on request.

Graphite

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No. 3.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

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WIRE ROPE DRESSING.

In the report of the Transvall Commission in regard to the best material for hoisting ropes, their care and preservation, which appears in the *Engineering and Mining Journal* for November 23, we find the following:

All evidence goes to show that the preservative treatment of a rope during its manufacture is a matter of the highest importance, and has a considerable influence on the life of the rope. The core, of tarred Russian hemp, should be thoroughly soaked in an acid-free lubricant. The wires should also be well lubricated while they are being laid-up, and the whole rope then, if the dressing is sufficiently thick and heavy, is well prepared to resist the corrosive action of a damp atmosphere. For shipment abroad, ropes are usually coated with

a black (plumbago) varnish; such a rope should be well treated with a lubricating dressing before being put to work, and this is a wise plan to adopt with all winding ropes.

ROPE DRESSINGS.

Regarding the composition of a suitable dressing, there are several recipes put forward. Most manufacturers favor plumbago, or graphite mixed with vaseline, linseed oil, palm or other vegetable oil.

Experience in Australia, in a Queensland colliery, showed cases where corrosion and breakage of a hoisting rope could be traced directly to the nature of the dressing used.

It should be pointed out that if a rope dressing is used which hardens on exposure to the atmosphere, care should be exercised to see that the pit-head sheave is kept cleaned out in the groove of the rim, as it has been proved by more than one accident that the winding rope can be thrown off the sheave by reason of accumulation of hardened lubricant in the tread.

QUALITIES OF A GOOD ROPE DRESSING.

A good rope dressing wards off corrosion and reduces frictional wear. It should be applied every fortnight in dry, or nearly dry, vertical shafts, but more frequently in inclined shafts on account of its getting rubbed off by friction sooner. In wet shafts the dressing should be applied weekly, or even oftener, if found to be necessary from the condition of the

rope. The dressing should be applied hot to the cleaned rope by slowly passing the latter through a box containing the composition. J. M. Wright exhibited a model of a mechanical rope cleaning and oiling machine, but no opportunity offered to try the device under working conditions. A simple machine should certainly tend to secure the regular and thorough cleaning and dressing of the winding ropes. J. B. Pitchford states: "In order to make a proper examination of a rope, it is necessary to clean it properly and remove all the tar, etc., from the wires, leaving them as bright as possible. One method of doing this is to pass the rope through a trough of hot oil, which removes all the tar. The trough is made of steel, and can be from 15 to 30 feet long. It is of U shape in section, and has a steam space of $1\frac{1}{4}$ or $1\frac{1}{2}$ in. around the bottom and sides. It is fitted with a relief valve and a drain, so that the condensation can be taken to the hot-well. The trough is filled with oil and heated, and the rope to be cleaned is passed slowly through it under depression pulleys by being wound from one rope drum to another. By providing two sets of rope-handling engines, the ropes can be passed back and forth, through the oil, till they are quite clean enough for examination."

WEIGHING BIG BUILDINGS.

If one goes through the offices of one of the big skyscraper construction companies these days he may see a roomful of young men all figuring away on interminable sheets of paper. The layman is astonished to learn that they are weighing skyscrapers, and that the tallest and most extensive buildings, up to the thousands of tons, are carefully weighed before they are built. The evolution of the tall building has brought forth remarkable engineering specialization along many lines, but none more noteworthy than in the case of the skyscraper weighers, for this weighing of the skyscrapers is no easy job. One cannot dump the material, like a pound of sugar, into a pair of scales and declare there is so much weight, because, in the first place, the scale has never been invented that will weigh a hundred thousand tons, and, in the second place, the material is not on hand. A skyscraper must be weighed before it is built—before the first caisson is sunk for the foundation or the first steel column is set up. The scales are pencil and paper, balanced by specially trained brains. And, finally, the operation of weighing a modern tall building may cover, when completed, as many as 30 or 40 typewritten pages. The weight of New York's largest skyscraper, now building in Cortlandt Street, is estimated at 86,000 tons.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

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READERS OF GRAPHITE.

The Dixon Company is never averse to pleasant words about any of its products, and one of its products in which the Dixon Company has taken a great deal of interest is GRAPHITE.

Not Graphite the wonderful lubricant, but GRAPHITE the monthly paper issued by the Dixon Company. The Dixon Company began publishing GRAPHITE in December 1898, and has endeavored ever since to make the paper of interest to all classes of people who make use of graphite, and also to make the little publication of value to public libraries, and to the colleges and others interested in technical publications.

In making a change in our mailing lists we have received very many letters indeed containing expressions of, we believe, sufficient interest to our readers to warrant our publishing them.

The superintendent of wires of an elevated railway company says: "I take great pleasure in reading Dixon's monthly pub-

lication, GRAPHITE. I thank you very kindly for same, and should be grateful to have you continue my name on your mailing list."

A firm of well-known consulting engineers writes: "We would say that your monthly publication GRAPHITE has proved interesting in the past, and we would be glad if you would send a copy of this to our New York Office according to the address given above."

The superintendent of bridges and buildings of a large railroad company says: "GRAPHITE is always welcome and interesting in any form (kegs or paper). The GRAPHITE you have been sending me has been of interest and value to me."

An official of another railroad company writes: "I think GRAPHITE is a bright little sheet, I always read it with much pleasure, as I always find some new points about graphite. I also think that graphite paint is the best paint now on the market for structural steel."

Still another official of a well-known trunk line says: "I find GRAPHITE very interesting, will you please continue it; I have used Dixon's Graphite Paint, and I have always maintained it is the best preservative of our steel bridges. Furthermore, I have ordered a quantity of Dixon's Dry Flake Graphite to use as a lubricant."

Again, we have from another superintendent of railway bridges: "GRAPHITE has always been a welcome visitor, and I am glad to be assured that it will be continued."

Still another: "I appreciate the receipt of your publication, and if its contents are as interesting in the future as they have been in the past, it will surely be good reading."

Others say as follows:

"GRAPHITE is very welcome, and I thank you for it."

"Your journal GRAPHITE has been coming to me for a long time, and I find in it some very valuable information, and I thank you for it."

"I have always appreciated the monthly publication GRAPHITE, and shall be pleased to receive same for 1908."

"I want to assure you that your little periodical has always interested me, and I hope to have it continued."

"I am looking for GRAPHITE every month, I always find in it something of interest, and something that is new."

The above is the tenor of probably a hundred letters which we have received from important officials of railway companies, constructing engineers, and other men whose duties are so important and who are so busy that the letters are especially interesting and most highly appreciated.

THE ULTIMATE GOOD.

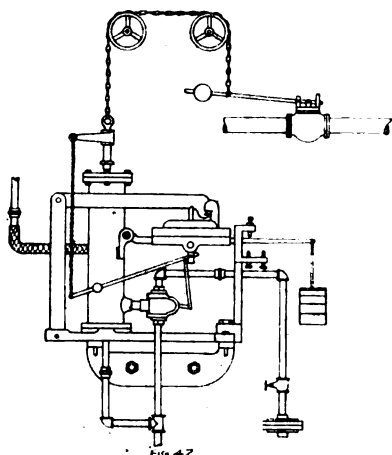
To suffer woes which hope thinks infinite;
To forgive wrongs darker than death or night;
To defy power, which seems omnipotent;
To love, and bear; to hope till Hope creates
From its own wreck the thing it contemplates;
Neither to change, nor falter, nor repent;
This, like thy glory, Titan, is to be
Good, great and joyous, beautiful and free;
This is alone Life, Joy, Empire and Victory!
—PERCY BYSSHE SHELLEY, "*Prometheus Unbound*."

PRESSURE REDUCING VALVES.

By W. H. WAKEMAN.

CHAPTER IX.

Fig. 47 illustrates a device for reducing boiler pressure to various lower points, for the purpose of regulating forced draft under steam boilers. It consists of an improved damper regulator, which operates a balanced valve in the steam pipe supplying an engine to drive a fan. This delivers air to a closed ash pit (or to more than one where a battery of boilers is in use.) The principle involved may be explained as follows: Assume that 90 pounds pressure is required on the boiler. So long as a correct gage indicates anything less than this, the weighted lever at the right controls the apparatus and holds the balanced steam valve open, thus allowing steam to drive the engine at full speed to increase the rate of combustion and secure more pressure.



As soon as 90 pounds shows on the gage, steam pressure entering the vertical pipe at the left raises the diaphragm and nearly shuts off steam, thus decreasing the draft, and preventing further rise of pressure. Under fair conditions the pressure will not vary more than one pound. Of course, this does not mean that the fire can be allowed to become dirty, or nearly spent for lack of fuel, and that this device will maintain the required pressure, as nothing has ever been invented that can accomplish such a wonderful result, under such conditions. It does mean, however, that with a good fire, that is clean and well sliced, this combination will prevent pressure from falling more than one pound, provided the quantity of steam wanted does not exceed the capacity of the boiler. On the other hand it will prevent overpressure, unless the supply of steam to the main engine, pumps, etc., is shut off, and pressure continues to rise owing to heat stored in the furnace walls and the boiler itself.

The balanced valve, shown in the illustration as operated by means of a chain passing over two pulleys, is adjusted so that it cannot close tight, for in that case the fan engine would stop, and when steam would be again slowly admitted the engine might be on the center, thus causing more or less trouble. The valve always allows enough to pass to keep the engine revolving slowly.

This combination can be used to regulate the pressure and supply to steam blowers for forcing air into the ash pits, by

direct application of steam. It probably takes more steam to do this than to run a small engine as above described so far as this part of the device is concerned, but firemen find that the steam jet so applied prevents the rapid formation of large and hard clinkers, hence the fires can be more easily cleaned, saving enough to pay for the difference in steam used. The value of an appliance for automatically regulating forced draft can only be appreciated by those who have tried to run fires without it, where large quantities of steam are used, or in places where varying quantities of live steam are wanted without notice for manufacturing purposes.

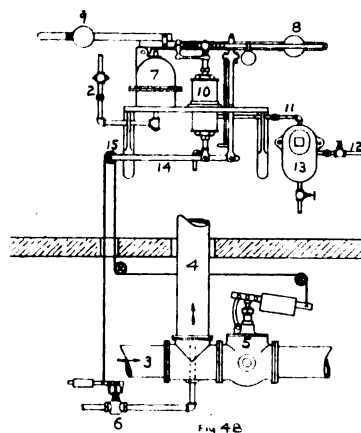


Fig. 48 illustrates a device for automatically regulating the use of exhaust steam, so far as it is sufficient for the purpose, also for reducing the pressure of live steam and delivering enough of it to make good any deficiency caused by lack of exhaust steam in the manufacture of paper, or any other industry where steam is necessary.

Investigation of this subject shows a surprising lack of mechanical skill, engineering ability and good judgment in failing to utilize the large amount of heat contained in exhaust steam. This, of course, does not apply to up-to-date plants where good engineers are employed at fair salaries, but to hundreds of small and medium sized plants where the most available men are employed at low salaries, without any special qualification for such responsible places. The most surprising point, however, in this connection is that after such men have secured these positions they do not educate themselves until they are fully qualified to hold them. The publishers of GRAPHITE are doing their part to assist such men in their efforts for self-improvement, and they should be duly appreciated.

Returning to a description of the illustration which shows a damper regulator used in connection with suitable valves for regulating the pressure of steam, 2 is a pipe that connects with the paper machine on which a light pressure of steam must be maintained at all times when it is in operation, and for example we will assume that this pressure is five pounds. Exhaust steam is coming through the pipe 3 and goes through 4 to the machine as indicated by the arrows, as the relief valve 5 is closed. The live steam valve 6 is also open, as there is not quite 5 pounds of steam on the machine, but soon the pressure is secured and it is brought through 2 to the diaphragm 7, moving it upward against the weighted lever 8, which is partly counterbalanced by 9. The effect of this is to open a small valve which admits water pressure to the

cylinder 10, through the pipes 11 and 12, also through the settling chamber 13. This water pressure raises a piston in 10, carrying the lever 14 upward with it, thus raising the wheel 15 over which a small wire cable passes, one end of which controls 5, while the other operates 6.

Now the lever on 6 will move first, because the weight on it is small and light, and the effect of this is to close the valve 6 and shut off the live steam supply, as this valve closes by an upward movement. After this lever has gone as far upward as it can, the wheel 15 continues to rise, therefore 5 is opened and some of the exhaust steam is allowed to escape through it, to a feed water heater, or to be used elsewhere. This relieves pressure in the paper machine, causing the diaphragm 7 and the piston in 10 to fall, and as 15 goes down it allows the heavy weight on 5 to descend and close the valve, thus stopping the escape of exhaust steam. If this is sufficient to restore the pressure to 5 pounds no further action takes place, but if only a light load is on the engine at this time there may not be enough for this purpose, hence 6 will be opened again to admit live steam. This process is continued indefinitely, using steam to the best possible advantage without the use of complicated machinery.

The sediment chamber 13 is properly piped to perform its duties, as water enters through 12 and escapes by 11, thus giving impurities a chance to settle to the bottom, so that they can be blown out through the drip pipe shown. This chamber is also used for another purpose, as the large plug can be removed and a piece of soap put inside. This slowly dissolves and tends to lubricate the parts with which the water comes in contact. It is a better plan to put in a small quantity of Dixon's Flake Graphite once each month, and as this passes out with the water used the piston and internal parts of the cylinder 10 will be nicely lubricated and will work easily accordingly.

This device, when considered as a complete machine, is a pressure reducing valve, because boiler pressure is received at the inlet of 6 and delivered at 5 pounds or less according to conditions.

(To be Continued.)

THE FIRST RECORD OF PAPER MONEY.

"Then there was another expedient of this shrewd veteran"—Don Inigo Lopez de Mendoza, Count of Tendilla, Christian governor of Alhama in 1483. "It happened that this Catholic cavalier at one time was destitute of gold and silver, wherewith to pay the wages of his troops, and the soldiers murmured greatly, seeing that they had not the means of purchasing necessities from the people of the town. In this dilemma, what does this most sagacious commander? He takes me a number of little morsels of paper, on the which he inscribes various sums, large and small, according to the nature of the case, and signs me them with his own hand and name. These did he give to the soldiery in earnest of their pay." The good count issued a proclamation, ordering the inhabitants of Alhama to take these morsels of paper for the full amount thereon inscribed, promising to redeem them at a future time with silver and gold, and threatening severe punishment to all who should refuse.

The people having full confidence in his word, and trusting that he would be as willing to perform the one promise as he

certainly was able to perform the other, took those curious morsels of paper without hesitation or demur. Thus, by a subtle and most miraculous kind of alchemy, did this Catholic cavalier turn worthless paper into precious gold, and make his late impoverished garrison abound in money.

It is but just to add, that the Count Tendilla redeemed his promises, like a loyal knight; and this miracle is the first instance on record of paper money, which has since inundated the civilized world without unbounded opulence."

—IRVING'S *Conquest of Granada*. Chap. XXVI.

THE MODERN CUPID.

All aboard.
Ding-ding.
Fair accord
Car-rides bring.
City fades,
City care,
In the glades,
Buried there.
Smiling fields,
Quiet pools,
Business yields,
Love rules.
Side by side
Pleasure's guests,
World defied,
Reason rests.
Loving glances,
World in song,
Life entrances
Joys a-throng.
Small musicians
In the grass
Cheat our visions
As we pass,
Flash along
Park and show.
Now we're married,
Better so.

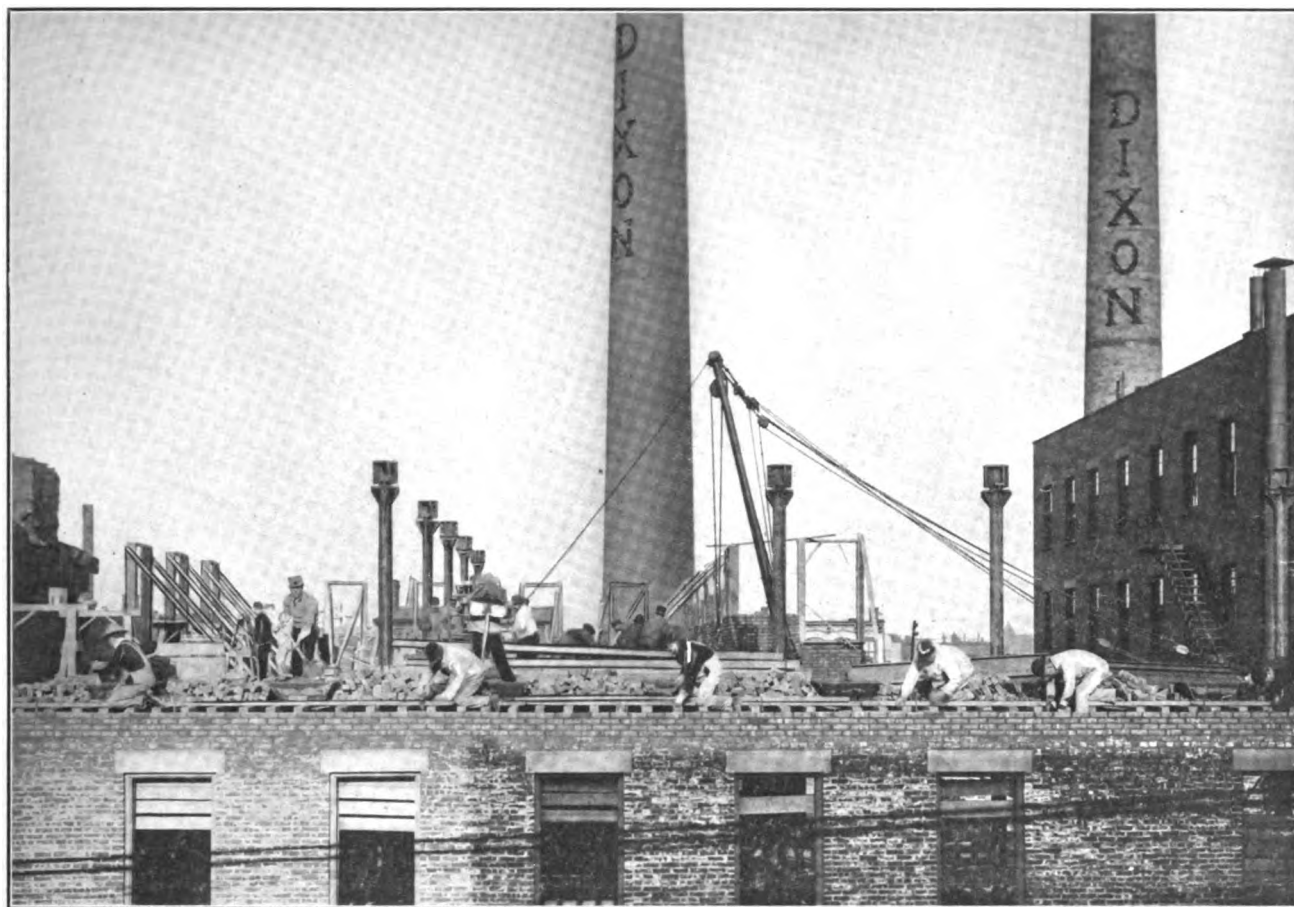
—*Tri-State Tourist*.

PLUMBAGO OF CEYLON.

Consul E. A. Creevey, of Colombo, reports that the first export of plumbago from Ceylon in 1825 was consigned to Joseph Dixon, the founder of the American Crucible Company, and that from that time up to the present the United States has led all countries in the consumption of this product. The exports of plumbago from Ceylon in 1906 amounted to 35,183 tons, the largest export of any year in the history of the trade, and were to the following principal countries, in tons: United States, 15,495; United Kingdom, 9,385; Germany, 3,362; Belgium, 3,201; France, 239; Japan, 130; Russia, 62.—*Newark Morning Star*.

THE CHIEF engineer of a large wire works company says that since they began the purchase of Dixon's Graphite Waterproof Grease for the lubrication of their roll necks, there has been great improvement in their works.

A STORY WITHOUT WORDS.



HOW DIXON MEETS HARD TIMES.

THE COMSTOCK LUBRICATORS AND DIXON'S SPECIAL GRAPHITE No. 635.

In a large plant where there are two vacuum pumps, the consumption of oil is about three pints per day each for cylinder lubrication. The best grade of oil is used, but there was considerable carbon deposited at the head end of the piston, which was a very hard end and had to be chipped off with a chisel.

The relief valves were very hard to move; in fact, a liberal supply of kerosene had to be used to move them at all. On one of these pumps a Comstock Cylinder Oil and Graphite Lubricator was placed and the consumption of oil for cylinder lubrication reduced to six ounces per day.

On the other engine, a Comstock Dry Graphite Lubricator was placed. Where oil and graphite was used, the quantity of carbon deposited was very much reduced and was of a very soft nature and could be easily scraped off. Where the Dry Lubricator was used, there was practically no carbon at all, and the relief valve could be easily moved by the hand, something which could not be done before.

Mr. Comstock also said that when the cylinders were examined they showed signs of perfect lubrication and had the dull gray velvet appearance (some engineers say it looks like a polished boot) which Dixon's Graphite gives metal surfaces, except at the top of one of the cylinders, where there were two long dry narrow streaks, showing that the cylinders were a little out of true.

This had never been noticed when oil alone was used, as the surfaces always took on a bright, shiny appearance when lubricated by oil. Some engineers are satisfied when they see the surfaces bright and shiny, but this bright and shiny appearance is caused by the rubbing of the metal surfaces together (friction).

Where Dixon's thin Ticonderoga Flake Graphite is used a thin, tough coating of marvelous smoothness is formed which makes a graphite to graphite contact, instead of metal to metal contact, for oil will burn, leaving the metal bare.

OIL ON BRAKE DRUMS.

Many people dislike the screeching of brake drums and would lubricate them to get rid of the noise, did they not fear lessening the grip of the brake.

Oil on brakes is in many cases an advantage, allowing the car to be eased up more smoothly. In the event of a sudden application of the brakes at a critical moment, the oil would make no material difference, because the pressure and friction would very quickly destroy its slipping powers. A *little graphite* mixed with the oil would improve matters. The screeching is probably due to sections of hard and soft metal. New shoes of good grain metal should effect a permanent remedy.—*The Motor Car*.

JOHN W. GATES, lately returned from Texas, says that when people begin to wear their old clothes adversity soon passes.



Fig. 1. Showing a Condition in Which a Double-Lipped Crucible is Advantageous.

DOUBLE-LIPPED CRUCIBLES.

Many brass founders are apt to look with derision upon the use of two lips upon a graphite crucible, while others continually use them and consider them quite advantageous. There probably is no more diversity of opinion upon any part of a crucible than upon this one. Many brass founders say that they do not desire any lips at all as they soon become obliterated, and a fresh groove must be cut in the edge from time to time when the crucible has had a considerable number of heats.

There are many instances, however, in which two lips are advantageous, and if a brass founder would lay all prejudices

pour. His flasks are set upon a spill trough and the crucible is carried as shown in Fig. 1. The flasks on one side of the trough are poured and then, in order to pour the other side, the crucible must be turned around. This is accomplished either by the helpers actually lifting the tongs and crucible up and turning it around, or by removing the iron rod which passes through the eye of the tongs, while the crucible rests upon the spill trough, and then turning crucible and tongs around. In either case, clumsy helpers occasionally will hit a flask or otherwise injure it. If a large crucible is used, it may not enter between the rows of flasks and then turning becomes more difficult.

A crucible with two lips is shown in Fig. 2 and if used for the purpose previously mentioned, no turning is necessary. The molder simply changes his own position to the other side of the spill trough, but the crucible, tongs, and helpers remain where they are. The crucible is ready for pouring on either side and the danger of disturbing the flasks when clumsy helpers are employed is obviated.

In the brass rolling mill the double-lipped crucible is also frequently useful. If the molds are placed opposite one another in a pit, then the same method may be used as that employed in the instance previously mentioned. Some brass casters prefer a double-lipped crucible on this account.

As a double-lipped crucible costs no more than one which has one lip, and its life is not shortened in any way by the presence of the second lip, crucible users have nothing to lose if they use them and they are found wanting.

—*The Brass World.*

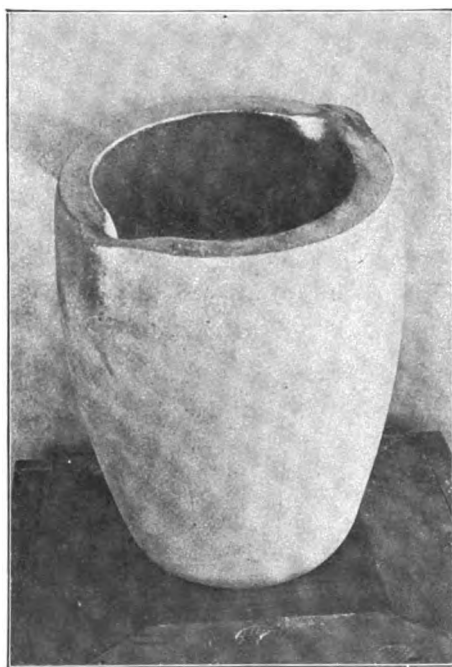


Fig. 2. A Crucible With Two Lips.

aside he would find that his molders will be able to pour his flasks more rapidly and, perhaps, with greater certainty.

Take for example, a bench molder who has a "heat" to

GRAPHITE FOR GASKETS.

The Wood-Worker, in giving advice in regard to live steam heaters, etc., where gaskets are made use of, says: "Such joints should be treated with Dixon's Graphite, ground fine and mixed with cylinder oil, in order that the head may be removed at pleasure without destroying the packing, thus saving the cost of a new gasket every time, and reducing the time required to make a good joint."

ECONOMY IN FUEL ON STEAMSHIPS.

To show how the efficiency of marine engines has been increased so far as economy of fuel is concerned, it has been figured out that while the marine engineers of 1840 only got two horse-power per ton out of their slow machinery, the engines of to-day produce from six to seven horse-power per ton weight of propelling apparatus. And even in the last two decades much has been accomplished in this line. For instance, the 8,000 ton *Fuerst Bismark* (1890), of the Hamburg-American Line, is said to burn twice as much coal as the 17,000-ton *President Lincoln*, build this year for the same company, and the *Baltic*, with a gross tonnage of 24,000 tons burns less fuel than *La Bretagne* (1886), of 7,000 tons. At the very beginning of ocean steam navigation it took 550 tons of coal to drive 2,000 tons across the Atlantic at a speed of only $8\frac{1}{2}$ knots. Had this rate of consumption been continued, the bills of the 22-knot liners of 20,000 tons would be for 9,000 tons of coal instead of 3,000.—*Marine Journal*.

DIXON'S graphite publications will be sent upon request.

LIGHT COMMERCIAL MORTALITY.

The business record of 1907 was truly remarkable. Money was dear and credit more or less strained throughout the year. After the March smash in stocks gloomy views prevailed at financial headquarters. In October occurred one of the most violent monetary shocks the country has ever known.

Now, commercial failures, measured by total liabilities involved, were thrice as great the average of the five preceding years. But the difference is almost wholly accounted for by the embarrassment of a very few big concerns, having plenty of good assets, but caught short of ready money. The number of concerns that failed was only four per cent. above the average of the five preceding years; and of all concerns in business, as reported by *Bradstreet's*, only seven-tenths of one per cent. failed—the smallest proportion, with the single exception of 1906, in twenty-seven years. Actual assets of failed concerns amounted to 72.3 per cent. of total liabilities.

This is the highest proportion ever reported, comparing with an average of little over fifty per cent. in the five preceding years. Already the *Westinghouse* companies—the most important commercial failures of the year—are well on the way to a solvent footing.

The commercial death rate was only half that of 1893. Total liabilities of concerns that failed, it is true, were only ten per cent. less. But the total number of concerns in business was forty per cent. greater; and their combined assets must have been at least a hundred per cent. greater. No exact statement on that head is possible; but bank deposits were three hundred per cent. greater in 1907 than in 1893.

Considering the trials of the year, the business of the country, we should say, showed an inherent strength that is encouraging.

—*Saturday Evening Post*.

GRAPHITE FOR LINOTYPE WORK.

We reproduce the following letter which comes to us which tells how Dixon's Special Lubricating Graphite No. 635 can be a valuable aid to linotype operators.

POUGHKEEPSIE, N. Y., Nov. 13, '07.

Dear Sirs:—I have used your graphite (dry) on our machines with great success. We used to have trouble with metal adhering to face of mold, but by making a paste of oil and dry graphite, and rubbing it on the face and inside the mold, it has overcome the difficulty. It also keeps the grooves of the mold clean, thereby causing proper alignment, (two-letter machine linotype). Rubbing it on the inside of jaws, prevents burs on ends of slugs, top or face.

Yours respectfully,

THE SURFACE BOSS of a mining company advises us that the company is very greatly pleased with the results obtained from the use of Dixon's Wire Rope Cable Grease in the lubrication of the mine cables.

MANY PEOPLE like to "discover" things for themselves and when a man has "discovered" that Dixon's Graphite Commutator Brushes, or Dixon's Waterproof Graphite Grease are decidedly to his liking and quite superior to articles of a similar kind, he is correspondingly happy and quite ready to speak up in meeting for Dixon.



The Red Light.

Stop! There is danger ahead.
Don't run past the red light.

Not all the danger signals are on the semaphore, however. The warnings given by a badly working air brake system, such as undesired quick action and other signs of imperfect lubrication, demand that you stop them or you pass the point of safety.

Stop and think this serious subject over seriously.

Stop and take a few minutes to write us for free test samples of Dixon's Graphite Air Brake and Triple Valve Grease.

Joseph Dixon Crucible Company,
Jersey City, N. J.

GOOD, INSIDE AND OUT.

As most of our friends know, the bulk of the tin can packages in which the celebrated Dixon's Flake Graphite is sold, are furnished by the can manufacturers already printed, and supplied with an enameled surface that renders the printing impervious to moisture and like influences. The illustration appearing herewith shows in facsimile a disc section of one of these enameled labels, and thereby hangs a tale.

Not long ago one of the Dixon staff went into a first class grocery and bought a can of table syrup of the first class put up by a first class concern.



Upon being taken home, the syrup was poured from the can into a suitable receptacle. The top of the can was melted off, and there in the bottom of the can was found the black and red enameled label that is almost inseparably associated with first class graphite. Just exactly what was seen is best shown by the cut that occurs above.

Dixon's Graphite is well adapted to a wide range of uses. It goes into pencils that keep our daily records, it enters crucibles in which are melted metals both precious and practical, it is a vital factor in lubrication, being the only perfect solid lubricant known, and it has a host of other valuable uses—we may fairly presume that no Dixon Graphite ever goes to waste. This is the first instance on record, however, of the use of the Dixon can itself.

PAINT GUARANTEES.

We publish, because of its timely interest, the following communication:

PEORIA, ILLINOIS, September 17, 1907.

DEAR SIR:—Why don't you get the different paint companies to agree to abolish all forms of guarantees from mixed paint? I am a paint salesman; have talked with representatives of a large number of the best houses and all are in favor

of the move, but none can afford the move alone, as all other houses would jump on them. It is high time this thing was abolished and every dealer in the country will welcome the day. The guarantee is a source of constant trouble to him.

Sincerely yours,

SALESMAN.

We have no clue to the identity of the writer, must presume he is just "one of the boys" who finds himself "up against it" from time to time when he has to "make good." He voices, however, what we know to be the general sentiment of the men "on the job."

The paint guarantee is a relic. It originated in the days when prepared paint was something new and strange, and the reluctant consumer demanded some guarantee against the unknown. Competition between manufacturers has gradually elaborated it into the sort of elaborate assurance given by the "spieler" at the country circus to the gaping countrymen. "Positively the most wonderful attraction on earth. The only living specimen in captivity. Two heads, four legs and seven bodies. Eats 'em alive. Money refunded if not satisfied. Step lively!" One mail order paint, said by a certain paint chemist to consist largely of water, bears a guarantee that it will look better after seven years than any other paint at the end of two years, or something to that effect.

As a matter of fact every paint is guaranteed, whether the guarantee be written or merely implied by the custom of the trade—in other words, no manufacturer can afford to ignore a legitimate complaint, and few manufacturers will even ignore a moderately illegitimate one. Other staple products are merely guaranteed by implication to give normal satisfaction if properly used. This is the only guarantee of white lead, if it goes even so far—the only formal guarantee of lead is that it contains no added pigments—and this should be the only guarantee accompanying a can of prepared paint. As a matter of fact, it is a far safer and simpler matter to guarantee the purity of any paint than to guarantee its service. Composition is a known quantity, but service depends on many unknown and uncontrollable factors.

The paint guarantee of a mail order house, selling by catalogue and practically inaccessible for enforcement of the guarantee, is quite a different matter from the guarantee of a legitimate paint manufacturer with representatives in every village. The guarantee of the former amounts merely to airy persiflage, while the guarantee of the latter is a check signed in blank, inviting every passer to fill in the figures for his own benefit. It is a temptation to falsehood—an invitation to dishonesty.

We heartily second the opinion of our correspondent, that it should be abolished by unanimous consent.

—*Drugs, Oils and Paints.*

The sentiments and policy of the Joseph Dixon Crucible Company are entirely in accord with the above letter and editorial remarks of *Drugs, Oils and Paints*.

For over forty years we have pursued the policy of refusing to guarantee service, but have stood on the basis of guaranteeing quick deliveries on the highest standard quality graphite paint that can be manufactured.

The service records of Dixon's Silica-Graphite Paint in its use in different climates of the world, is sufficient recommendation of the product.

COMFORTING EXTRACTS.

From Letters Received From Users of Dixon's Flake Graphite.

D.—“I am a firm believer in Dixon's Flake Graphite for lubrication, and in my position as stationary engineer I used it always. Possibly you have some information which I have not, so will you kindly send me your booklet entitled ‘Graphite as a Lubricant’.”

I.—“I find Dixon's Flake Graphite of great use in our Canadian climate. In the cold weather that we have here, Dixon's Flake Graphite must necessarily take a prominent place in the lubrication of machinery. I shall be very glad if you will send me copy of your pamphlet entitled ‘Graphite as a Lubricant’.”

X.—“After years of experience as engineer, I must say that Dixon's Graphite makes it so much easier in the engine and boiler room to do good work, and get lasting benefits of its use, that it would be very inconvenient, if not impossible to do without it. I make use of Dixon's finely powdered No. 2 Flake Graphite.”

O.—“I have charge of a lot of conveying and elevating machinery here in Southern Texas, and find that Dixon's Flake Graphite helps us out of a lot of trouble. We are pleased with it in every way. I have made use of Dixon's Graphite for a good many years, and am certain that it must be of great use in our various oil mills and industries here in Texas.”

N.—“I resigned from the position of an engineer two years ago to accept a position selling lubricating oil. I find Dixon's Flake Graphite in nearly every engine room I visit, and find that it is a great aid for better lubrication. All oil men should advocate its use as a help to their oil. As a surfacing material for the bearing parts it is absolutely without an equal. For my own information I would like you to send me copy of your pamphlet ‘Graphite as a Lubricant’, as I desire to know something more concerning it. I thank you in advance, and wish you continued success.”

S.—“I have been an engineer for ten years, and always have used Dixon's Flake Graphite. I have a ten pound can in my engine room at present, and I don't see how any engineer can get along without it.”

GRAPHITE IN GAS ENGINES.

The manager of the gas engine department of a well known engine manufacturing company reports that he is very much interested in graphite for the cylinders of gas engines. They have been using the regular No. 1 Flake Dixon Graphite with excellent results, and are extending their experiments more and more. Further experiments will make use of the finely pulverized flake graphite known as Dixon's No. 635.

The experiments have demonstrated that where Dixon's regular No. 1 Flake Graphite is used, there has been no trouble with fouling of the igniter or with pre-ignition.

The manner of feeding the graphite is through a small opening near the highest point in the air intake pipe. The feeding of graphite, however, in this manner necessitates dependence upon the memory of some man, therefore, the best results and uniform results cannot be obtained as readily as when the graphite is fed by some automatic or mechanical lubricator.

DIXON'S GRAPHITE FOR THE NEW YORK-PARIS AUTO RACE.

The following is clipped from the *New York Times*, issue of Jan. 26, 1908. It appeared as part of an article on the proposed auto race between New York and Paris.

Some concern has been expressed regarding the freezing of lubricating oils in intense cold. The addition of flake graphite to oils that are brought down to withstand severe cold and lose much of their lubricating value is expected to solve the problem. The function of the flake graphite is to attach itself to the minute irregularities which exist in the metal surfaces, giving them a thin, tough, veneer-like, smooth coating and preventing damage to the contacting surfaces in the event of the temporary failure of the lubricating system. It also materially lessens friction.

The Joseph Dixon Crucible Company has announced that it will furnish such contestants of the New York-Paris auto race as desire them, with motor graphite greases adapted for extreme cold, and motor graphite to be used with lubricating oils. They will also arrange to furnish the cars with a new supply of lubricants at San Francisco.

WHERE THE HEAT GOES IN A GASOLINE ENGINE.

It is pretty generally agreed that the heat expenditures in a modern water-cooled gasoline motor are, according to *Country Life*, about as follows:

To useful work	17 per cent.
To loss in radiation (not through water jacket)	15 “ “
“ “ into water jacket	52 “ “
“ “ in exhaust	16 “ “
<hr/>	
100 per cent.	

GRAPHITE IN A BOILER.

To the Editor of the American Journal of Steam and Electrical Engineering:—

If graphite, used as a cylinder lubricant, works its way into the boiler with the feed water, would it act to advantage or as a detriment?

Graphite in a boiler is an advantage rather than a detriment. If the feed water contains scale forming salts, the graphite will combine with the scale to make it softer and more easily crumbled. Graphite is absolutely inert and, though it is a form of carbon, no electrolytic action has ever been traced to the presence of graphite. It is an excellent conductor of heat and its presence on the boiler sheets offers no increased resistance to the transfer of heat.

When graphite is rubbed upon boiler plates and tubes, as is sometimes done when cleaning and overhauling them, not only will the scale not adhere closely, but pitting, grooving and other forms of local corrosion cannot occur.

The facts in connection with the presence of graphite in boilers have above been stated and we shall give a few words elsewhere in this issue.

DIXON'S GRAPHITE Triple Valve Grease is steadily winning its way into strong favor among engineers, master mechanics and superintendents of motive power.

IN THE SHADOW.

In those dewy, twilight valleys,
Where but mellow sunbeams stray,
(Half of sunshine, half of shadow,
Blend of eve and blend of day),
Grow the sweetest woodland flowers,
Waxen-petaled, soft and white,—
Pale, as though the moon in passing
Buried there its silver light—
And a perfume mild, exquisite,
Ever from their bloom exhales,
Fragrance rare and vague and dreamy,
Lent from Eden's flowered vales.

But they tremble, ah, they tremble,
In the thoughtless, wandering winds,
And they wither, ah, they wither,
At the first frost winter sends,
While the hardy hillside flowers,
In the sun-rays longer bloom,
Knowing not that transient beauty,
But a dreader, lasting doom,
For that wild, exquisite fragrance,
Lingers 'round the valleys still,
Vague and haunting, pure and deathless,
Through the winter's blighting chill.

—ROBERT HAYGOOD MCCONNELL in *Uncle Remus's Magazine* for December.

GRAPHITE AS A BOILER COMPOUND.

EDITOR *The Engineer*:

After reading the article "Graphite as a Boiler Compound" by E. H. C. on page 1103 of the Dec. 2 issue, I must say that graphite has an advantage; it tends to lubricate the engine, as his chief claims, when carried over to the engine, but if we feed kerosene into the boiler and carry it over to the engine it will stiffen the valve, piston and stuffing box, and in this case it would be better to use graphite. Regarding the soft, sandy scale $\frac{1}{4}$ to $\frac{3}{8}$ inch thick, I believe it does not come from the graphite; I believe it is from the kerosene that was left on the old flues. The graphite does not stick to the old flues that are full of scales, but it prevents scale from forming on a new flue. The graphite circulates in the boiler, and the kerosene does not, it floats. If the kerosene is only fed into the boiler now and then it is of very little value, because it evaporates and is carried over to the engine as above mentioned. By this it will make the boiler foam. The graphite settles little by little down to the bottom of the boiler or the flues or flue sheet, or locates where scale will settle, thus preventing scale.

—GUS. A. JANICKE in *The Engineer*, Chicago.

THE PURCHASING agent of a large copper company takes an interest in all well advertised and well recommended goods that are brought to his attention and has them tested out in the copper company's works. If the tests prove the claims the goods are adopted.

That purchasing agent is bound to reap good rewards in this world and sure of his halo in the world hereafter.

Productions of the Dixon Crucible Co.

Dixon's Black-lead Crucibles and Retorts, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

Dixon's Brazing Crucibles, made in several shapes for dip-brazing.

Dixon's Graphite Boxes and Covers, for baking carbons and filaments for electric lighting.

Dixon's Fine Office and Drawing Pencils, unequaled for smooth, tough leads and uniformity of grading.

Dixon's Colored Crayons, in wood or solid. For schools, railroads, editors or factory.

Dixon's Lumber Leads, black or colors; for green or dry lumber.

Dixon's Metal Workers' Crayons.

Dixon's Felt Erasive Rubber, for erasing pencil marks, type-writer work or ink.

Dixon's Carburet of Iron Stove Polish, the old reliable; in cake.

Dixon's Pure Flake Lubricating Graphite, a solid lubricant for all frictional surfaces.

Dixon's Special Graphite No. 635, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

Dixon's Electrotyping Graphite, used by the majority of practical electrotypers of this country.

Dixon's Hatter's Lead, for coloring hat bodies.

Dixon's Plumbago for Shot Polishing.

Dixon's Plumbago for Powder Glazing.

Dixon's Plumbago Foundry Facings.

Dixon's Yacht Plumbago, for lubricating and smoothing bottoms of yachts.

Dixon's Graphite Waterproof Grease, for gears, wire ropes, hoisting chains and general machinery.

Dixon's Graphite Axle Grease, for trucks, wagons, carriages.

Dixon's Graphited Wood Grease, for use on trolley car gears which are enclosed in a gear case.

Dixon's Graphited Oil, for use in all places where the use of a gear grease is impracticable.

Dixon's Graphite Cup Greases, for use in cups or open bearings, on spindles, shafting, etc.

Dixon's Oiled Graphite,

Dixon's Lubricating Compound No. 688, for enclosed gears of electric automobiles.

Dixon's Silica-Graphite Paint, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

Dixon's Graphite Pipe-Joint Compound, for steam, gas and water piping, smearing gaskets and flanges.

Dixon's Automobile and Bicycle Lubricants.

Dixon's Graphitoleo, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

Dixon's Commutator Graphite, will glaze commutator with the finish so much desired by electrical engineers.

Dixon's Graphite for Type Setting Machines.

Dixon's Graphite for Talking Machines.

Dixon's Motor Chain Compound, for transmission chains.

Dixon's Crucible Clay and Graphite Mixture, for lining and repairing fire boxes.

Dixon's Stove Cement, for repairing stove or range lining.

Dixon's Traction Belt Dressing, for leather belts.

Dixon's Solid Belt Dressing, convenient for those who prefer a solid dressing.

Dixon's Graphite Resistance Rods, from one-eighth to one inch diameter; any resistance required.

Dixon's Graphite Brushes, for motors, dynamos and generators.

Dixon's Graphite Products for Electricians.

Special circulars with detailed information sent on request.

PRACTICAL APPLICATIONS OF GRAPHITE.

A number of very interesting articles by Mr. H. Jahnke have appeared in the trade papers concerning the practical application of graphite about the engine room. We reproduce below a portion of the article which appeared in the October issue of *Power*, to whom we are indebted for permission to reproduce the article as well as for the cut that occurs in connection therewith.

GRAPHITE MIXTURE CURES GROANING.

Groaning in a cylinder can often be cured by the application of graphite mixed with cylinder oil, forced into the cylinder with a hand-pump.

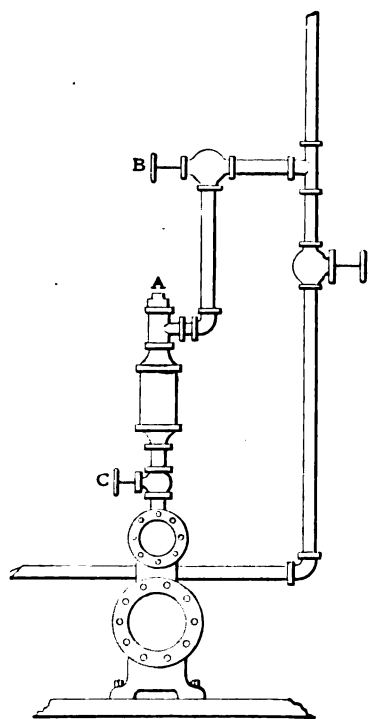


FIG. 1.

cylinder when the pump is throttled down.

The operation is as follows: When it is necessary to feed the graphite mixture, the plug *A* is removed from the tee and a supply of graphite and oil placed in the feeder, the plug is replaced and the valves *B* and *C* are opened, when the graphite will be forced into the steam chest and cylinder.

CORRECTING UNEQUAL STROKE.

One side of the writer's duplex steam pump used to make a shorter stroke than the other, due to the water cylinder being worn, and no amount of adjusting of the steam valves would remedy the trouble. Then was tried the following method, which readily overcame the difficulty: The piston and rod were removed from the troublesome side of the pump and the walls of the cylinder were covered with graphite mixed with a little engine oil, well rubbed in; the piston and rod were replaced and the pump was put in service again, when this side ran much better than the other. The other side was treated in like manner, when both pistons made a full, even stroke, and when the pump was not in service the pistons could be moved easily by hand, which showed that there was not much friction in the water cylinder. It was also

found that the water-piston packing will last much longer, and that this treatment is likewise excellent for the steam cylinders of pumps and even engines, and they are so treated whenever the pistons are taken out for any reason.

BLOW-OFF PIPES; GRAPHITE ON JOINTS.

EDITOR *The Engineer*:—

About 3 years ago it became necessary to replace the blow-off pipe on our boiler due to the pipe leaking. All the joints came apart easily except the joint which screwed into the boiler. This pipe is 4-inch extra heavy and could not be moved with a 6-foot chain tong, due to rust and corrosion, so the pipe had to be cut out.

When the new pipe was put in, the thread on the end which screwed into the boiler was covered with graphite mixed with cylinder oil. In like manner all other joints were covered. When a short time ago it became necessary for taking the blow-off pipe apart again on one of the boilers due to a leak, it was found that the end of the pipe which screwed into the boiler came out much easier than the last time.

When I put this pipe in and covered the threads with graphite I thought that the graphite would not do much good, as I thought the heat would affect the graphite.

I have stopped leaks in unions of the ground joint type by applying a thick paste made of graphite and cylinder oil to the threads and screwing the union together again. The graphite will fill up the irregular places, thereby stopping the leak, doing away with regrinding the joints.

—H. J. in *The Engineer*.

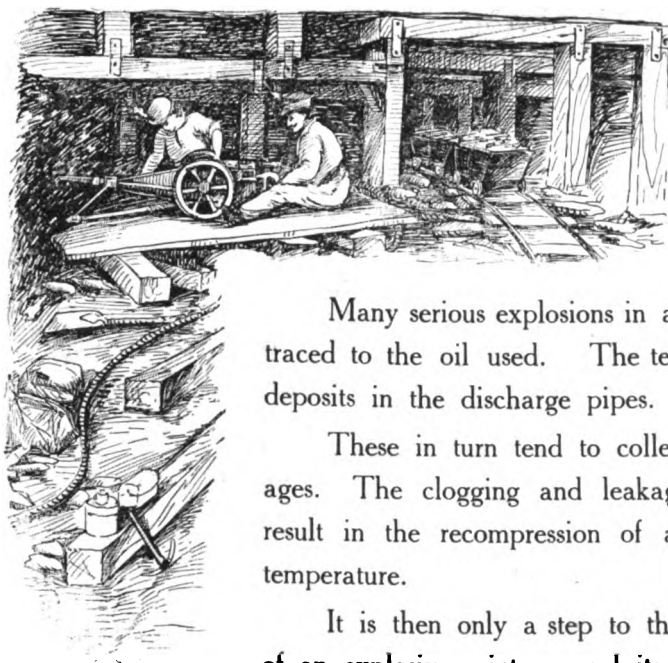
PLEASANT SAYINGS.

By Engineers Who Have Used Dixon's Graphite Air Brake and Triple Valve Grease.

"After giving Dixon's Graphite Air Brake and Triple Valve Grease a thorough trial in brake valves and triple valves, and also using the same in driving brake and tender brake air cylinders, and on piston packing leathers in cylinders, I am ready to say that it has no equal. It gives entire satisfaction with all atmospheric changes.

"I can honestly say without fear of contradiction that Dixon's Graphite Air Brake and Triple Valve Grease is the best article that I have ever used as a lubricant for the rotary valve of the engineer's brake valve. I have no hesitancy in saying that Dixon's Graphite Air Brake and Triple Valve Grease cannot be equaled, for I have tested it as far as triple valves dare to be tested. It makes my work lighter and gives better satisfaction to the engineers in handling brake valves and triple valves. I would be willing to go down in my pocket and purchase it for my own benefit as well as for this company's."

It was a happy idea on the part of a superintendent of motive power to give to each engineer a small quantity of Dixon's Flake Graphite No. 2 for use in cases of emergency. For this purpose the superintendent of motive power directed the storekeeper to order one 100 pound keg of the material. Later on this means some business for Dixon, and a great deal of satisfaction to the engineers of that road, and a saving in wear and tear.



Many serious explosions in air compressor systems have been directly traced to the oil used. The tendency of oils is to carbonize and form deposits in the discharge pipes.

These in turn tend to collect dust and soot and choke the passages. The clogging and leakage of the discharge valves may easily result in the recompression of air already hot to a dangerously high temperature.

It is then only a step to the vaporization of the oil, the formation of an explosive mixture, and its ignition.

This has happened too frequently and it may happen at any time when the necessary conditions obtain. But there is a way to minimize this danger or eliminate it entirely—use

Dixon's Flake Graphite

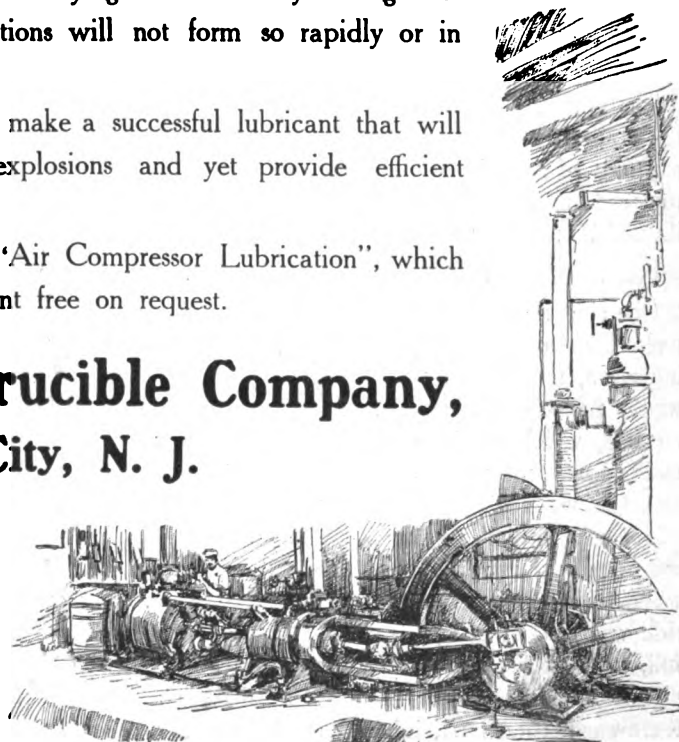
This will permit of the use of smaller quantities of oil which will be found to give as good service as the larger quantities necessary where no graphite is used.

Reduced oil supply means not only greater economy but greater safety, since combustible accumulations will not form so rapidly or in such large quantities.

Flake Graphite and soapsuds make a successful lubricant that will remove the slightest danger of explosions and yet provide efficient lubrication.

Write for our special booklet, "Air Compressor Lubrication", which goes into the subject fully—it is sent free on request.

Joseph Dixon Crucible Company,
Jersey City, N. J.



Graphite

VOL. X.

APRIL, 1908.

No. 4.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

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CENTENNIAL OF ANTHRACITE COAL.

On Tuesday and Wednesday, February 11th and 12th, of this year, there was celebrated at Wilkesbarre, Pa., the centennial of the successful experiment of burning anthracite coal in a open grate.

Invitations were sent to all of the Pennsylvania state officers to be present during the festivities.

In connection with the celebration bronze medals were struck off, on the face was a silhouette of Judge Jesse Fell and the inscription: "Centennial of first use of Wyoming coal, February 11th, 1908." The obverse side bore the seal of the Wyoming Historical Society.

The experiment of a century ago in burning anthracite coal was made by Judge Fell in his mansion, which still stands at Washington and Northampton

Streets. The judge left at his death a memorandum of his discovery, written on the flyleaf of a treatise on Masonry. He said:

"February 11, 5808 of Masonry, made the experiment of burning the common stone coal of this valley in a grate in the common fireplace in my house, and find it to answer the purpose of fuel, making a clear and better fire at less cost than burning wood in the common way."

The original grate cannot be found. The Fell mansion, now a tavern, has been rebuilt, but the original fireplace is still preserved.

The general idea associated with the burning of coal seems to be that our grandfathers, our great grandfathers, and even beyond that, were in the habit of burning coal. Very few people realize how comparatively new are even the ordinary luxuries of modern life, to say nothing of the wonderful things that have come to us in the past twenty-five years.

THE CHIEF engineer of the power plant of a street railway company reports satisfactory use of Dixon's Graphite Brushes. The commutators were put in good shape, the Dixon Graphite Brushes carefully adjusted so far as tension is concerned, and now practically all of the motor generators are equipped with the Dixon Brush with marked improvement in running and general satisfaction.

FRANKLIN AUTOMOBILES.

A good friend of the Dixon Company writes as follows:

"In regard to the sample can of Dixon's Graphite Grease No. 677, which you sent me last Spring, I take pleasure in reporting to you that I have used this grease constantly in my Franklin car since that time, and have found it most satisfactory; in fact, would not be able to get along without it now.

"I use it in the transmission and in the universal joints of shaft, the ends of steering rods, and in many parts of my car where oil would be too thin. It certainly gives me pleasure to recommend this grease in the highest terms.

"I have been constantly using Dixon's Flake Graphite in the cylinders of my car and find it most satisfactory."

One of the Dixon staff who has a Franklin runabout has been doing the same thing with the same degree of satisfaction, and undoubtedly there are many other Franklin owners who value the worth of Dixon's Graphite Lubricants.

DIXON'S CRAYONS FOR R. R. WORK.

Dixon's Crayons are proving extremely popular with engineers and surveyors for marking purposes. Prominent engineers of two of New England's largest railroads have recently highly complimented Dixon's Yellow Crayons for this purpose.

In surveying work on railroads the Yellow Crayons are used for marking various points on the rails. For such work the ordinary chalk is likely to wash off after one rain storm. Dixon's Yellow Crayons, however, will leave a clear mark for months. One case was recently reported where the marks were seen distinctly after eight months' exposure to the weather.

Those familiar with this important branch of railroad service will fully appreciate the advantage of using Dixon's Crayons for such purposes. In many cases it facilitates important work and prevents delays that would be far more expensive than a year's supply of the crayons.

THE EXERCISE IN IT.

Noosey—"Didn't I hear you tell Lazerbee to take a ride in his motor car for an hour each day?"

Dr. Wise—"Yes."

Noosey—"Do you really think the riding will help—"

Dr. Wise—"No, but the three or four hours of work repairing the thing will surely do him good."

—Philadelphia Press.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

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HEATING OF SPARK PLUGS.

Having read in *The Forum* the inquiry from L. S., San Francisco, I might be able to explain some of the trouble, as I have experienced something similar. I had an apparently good water circulation, and yet my cylinder head became very hot. By experimenting I found out that the circulation was all right, so that it could not be that. Then it occurred to me that I had cut a new gasket, and on looking this over, found that it was the cause of my trouble. The cylinder head on my motor is water-cooled and the water passes into the head through six holes, three in front and three directly under the discharge pipe. In my gasket I had cut out the six holes, and the water, finding an easier way through the holes under the discharge pipe than through the others, went directly into the discharge from these holes, and made the head a complete water or steam pocket, where the water became boiling hot, and of course the head very hot, too.

A. S., BROOKLYN, N. Y.

In *The Forum* of May 10, L. S. asked why the spark plug in his motor heats. I have experienced something similar, and hope my suggestion will aid him in locating the trouble. It may be that the packing inside the plug is not perfectly tight, or that the thread in the cylinder head is damaged. In either case there would be enough flame come through to heat the plug red hot in a short time, unless the thread is badly damaged, the use of a little graphite pipe joint compound ought to fix it.

PHILADELPHIA, PA.

V. B. M.—*Motor Boat.*

Dixon's Graphite Pipe-Joint Compound is well adapted to purposes described above as well as all pipe connections. Joints are kept perfectly tight as long as may be desired, but may also be taken apart at any time without damage to tools or fittings.

A REMEDY FOR HOT CRANK BOXES.

Editor Review:—Enclosed find 50 cents for one year's subscription to your valuable paper, which I have been reading for several years; and I would feel lost without it.

My brother and I run a complete Reeves outfit: 25 H. P. engine, 36x60 separator with all attachments.

We also use the engine for plowing and sawing lumber. Steam plowing is a very common thing here. We are going to case the gearing on our engine and run them in oil. I will tell my brother threshermen later through *The Review* how I like it. If any of my brother threshermen are troubled with hot crank boxes, try a pin hard oiler, and in it use five parts hard oil, five parts cylinder oil and one part flake graphite. This mixture beats anything I ever tried on a crank box. We also use it in screw down hard oilers where boxes are inclined to run hot.

Wishing *The Review* and its readers prosperity.

HENRY FETTE, Muenster, Texas.

—*The Thresherman's Review.*

LUBRICATION THE MOST IMPORTANT POINT.

"If there is any one most important point connected with the use of gasoline engines, or engines of any other sort, for that matter, it is the matter of lubrication," remarked a motor manufacturer a few days since, "but despite its importance it is difficult to drill the fact into the brains of those who use motors. Whether they use motor cars, motorcycles, motor boats or air ships, the disposition of the operators is to give the motors too little oil. 'Spare the oil and spoil the motor' is a paraphrase that ought to be pasted or engraved prominently on the dash of every car."

The above is from *The Motor World* and nothing truer or more vital to the manufacturer or the user of a gasoline engine has been uttered. Oil alone, however, is not enough; a finely powdered flake graphite should occasionally be introduced either through the spark plug holes or through the vent pipe.

The minute flakes of the finely powdered unctuous graphite form a veneer like coating on the bearing surfaces of pistons and cylinders of marvelous smoothness and endurance. The graphite greatly aids the work of the oil and largely improves compression. While the intense heat at moment of explosion quickly and readily burns the oil it has no effect on graphite.

PRESSURE REDUCING VALVES.

By W. H. WAKEMAN.

Chapter X.

Fig. 49 illustrates another form of a combination reducing valve that may be used for controlling steam, water or air at pleasure, but for the purpose of illustrating its operation it is assumed to be installed as part of a compressed air system. It is taking air at a high pressure at the inlet 2 from the main service pipe, and discharging it at a lower pressure from the outlet 3 to a branch line in which the quantity of air required varies greatly according to the work in hand. It will maintain the required lower pressure as long as the inlet pressure equals or exceeds the reduced pressure wanted, and if for any reason the initial pressure is not maintained, the reducing valve will remain wide open and let the full capacity of it pass through.

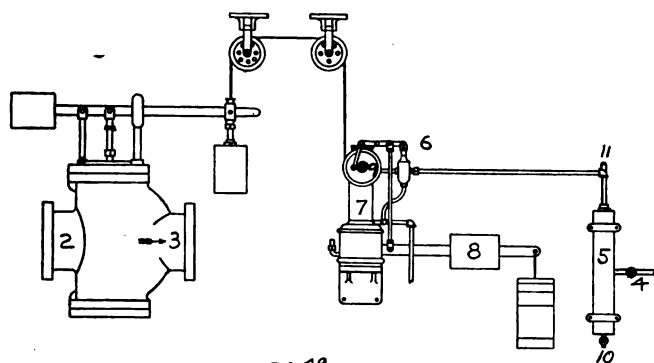


FIG 49

The valve 4 is connected by suitable piping to the main service pipe in order to get a high pressure for operating the regulator. Air passes through the separating chamber 5 to the pilot valve 6, which controls its admission to the cylinder 7 in which there is a piston that is forced downward by the air pressure against the leverage exerted by the weighted lever 8. This arrangement is unique, as the weighted lever usually forces a diaphragm downward, while pressure from the piping raises it.

Assume that an air pressure of seventy-five pounds is carried in the main service pipe, which is brought to the operating cylinder and piston 7 through the connection 4, while a reduced pressure of 50 pounds is wanted at 3. So long as the latter is less than 50 pounds the lever 8 remains in its lowest position and the full capacity of the reducing valve is discharged at 3, but when fifty pounds pressure is secured, the piston in 7 is forced downward, the quadrant 9 is turned, and as it operates the small cable passing over the two pulleys shown, the pressure reducing valve is partly closed until the correct amount of air is delivered to maintain fifty pounds pressure, and no more. The lever by which this valve is controlled is weighted at both ends, but the weight on the left hand end is to counterbalance the internal parts and prevent vibration.

The cylinder 7 should be lubricated occasionally, according to the service in which it is used, as frequent changes of pressure cause more travel of the piston than where a nearly constant supply of air is demanded. It may be secured by shutting off air at 4 and opening 10 to relieve all pressure in

5. Then close 10, remove the plug 11 and put in a small quantity of Dixon's Flake Graphite. The right quantity can be determined by experiment, but the tendency in all such cases is to use too much of the lubricant. Replace the plug 11, open 4 and the graphite will find its way to the cylinder and piston.

The following directions should be observed when adjusting this device after it has been installed as illustrated. Turn on air pressure at 4 and put enough weight on the end of 8 to bring it down as far as it will go. Connect the cable to the lever of the reducing valve, pass it over the pulleys and pull the valve wide open. With the parts in this position pass the other end of the cable to the left hand side of the quadrant, bring it under and fasten it to the pin provided for this purpose at the right hand side, thus bringing it into the position illustrated, taking care to make the cable long enough to allow full movement of the parts. Adjust weights on 8 to secure the desired reduced pressure, which in this case is fifty pounds, but it can be varied to suit different conditions.

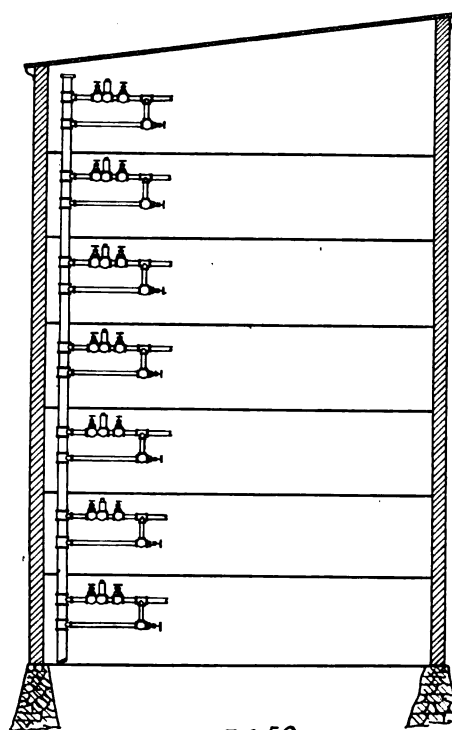


FIG. 50

Fig. 50 illustrates the application of pressure reducing valves to the water system of a building seven stories high. It may be extended as much further as desired, but this is sufficient to illustrate the process. Suppose that each story is twelve feet high, in which case the upper water outlet is seventy-two feet above the lower. The pressure of water at the base of a vertical pipe is found by multiplying the height in feet by .434, and this shows that pressure at the lower outlet is $72 \times .434 = 31$ pounds more than at the upper. Of course, there will be the same difference if the supply is received from an overhead tank.

Now it is possible to use water from such a system, with different pressures on the several floors, but in an office building where the equipment is assumed to be up-to-date it is much more suitable to have the same pressure on all floors, and it can easily be accomplished by the use of modern ap-

pliances. Assume that on the lower floor there is fifty-two pounds pressure, giving $52-31=21$ pounds on the highest outlet. By means of pressure reducing valves it is possible and practical to have twenty-one pounds on every outlet pipe, thus giving uniform service throughout the entire building, so that one party cannot feel that another has better or poorer service than he is given.

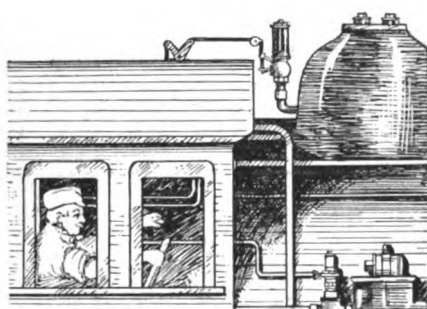
At the same time this arrangement leaves the main stand pipe free of all encumbrance, consequently in case of fire a steamer can force water up through it to the fire plugs wherever they are located, independently of every other consideration.

In all cases the pressure reducing valve has a gate valve on each side of it, so that in case repairs are necessary all pressure can easily be shut off at pleasure. A by-pass fitted with an angle valve is provided for maintaining the service while others on the same floor are closed.

These pipes should be painted with Dixon's Silica-Graphite Paint, because it will last well and owing to the fact that it is not a jet black color it does not show the dust that is sure to settle on it as plainly as where a less harmonizing color is used. Of course, all pipes in a well kept establishment ought to be wiped off every day, but it is safe to predict that this will not always be done, consequently good judgment should be displayed in selecting a color that will be pleasing in effect.

This concludes the series of articles on pressure reducing valves, and it is hoped and confidently expected that a thorough perusal of the same will show them to be valuable to all who are interested in machinery.

DIXON's graphite publications sent free upon request.



46 Keep a Can in The Cab

In case of hot pins or bearings,
groaning cylinders, hard working
engineers' valve, use

DIXON'S FLAKE GRAPHITE.

Better yet, use it regularly, and
avoid all friction troubles.

Write for descriptive booklet
and free sample.

Joseph Dixon Crucible Co.
Jersey City, N. J.

Y Y Y MAN.

There is a farmer who is Y Y
Enough to take his E E,
And study nature with his I I,
And think of what he C C;
He hears the chatter of the J J,
As they each other T T,
And sees that when a tree D K K
It makes a home for B B.
A yoke of oxen he will U U
With many haws and G G,
And their mistakes he will X Q Q
When plowing for his P P.
He little buys, but much he sells,
And therefore little O O;
And when he hoes his soil by spells
He also soils his hoes.

—SAM LLOYD, in *Woman's Home Companion*.

ONE OF man's best friends, says *Prometheus*, will have a 250th birthday sometime in 1908. The day cannot be fixed when the lead pencil was first used, but all signs, all records, show that it was just about two hundred and fifty years ago that the useful article was invented. The "præductal" of ancient Rome, which was a leaden disk used to draw lines, was undoubtedly its progenitor. In the fourteenth century lead and silver points were used in Italy, but employed exclusively by artists. For the sake of cleanliness these were encased in wood and became the first lead pencils, but the pencil similar to those of the present day came after discovery of graphite, in 1665. The first German pencils were made in Nurnberg, where there are now thirty pencil factories, which turn out about eight hundred million pencils every year.—*New York Tribune*.

THE MANY perplexing questions that have come up concerning the Thaw trial have taken second place to the more serious question as to "whether a lady should smoke" in the restaurants in New York City.

The women of the Gotham Club at a meeting spoke strongly against the habit of women smoking. One of the women who had spoken against the habit confided to a *New York Times* reporter:—

"I often smoke, you know, but it would never do to admit it in public. The prestige of the club must be preserved." There is a politician for you.

DIXON'S FLAKE GRAPHITE has helped greatly in making an engineer's reputation. Its use is to an engineer what good clothes are to a man of the world.

ALL THE SAME TO HIM.

Rustic (to conductor of tube railway)—"Which end of the carriage do I get off?"

Conductor (politely)—"Whichever end you prefer; both ends stop."—*Pearson's Weekly*.

SIGNS OF THE TIMES.

In the February monthly edition of *Power* there occur three references to graphite in articles written by contributors whom we may believe to be practical men. The first reference occurs in the article entitled, "Simple Methods of Testing Feed Water and Lubricants," by James E. Noble. In taking up the consideration of lubricants, he mentions graphite as among the solid lubricants, and it is interesting to observe that graphite is the first in the list. While graphite has won its way to such an extent that it is well recognized in the lubricating field, there are still many who, when lubricants are mentioned, think only of oil and grease—but we are progressing.

The second reference occurs in the article entitled, "Some Dynamo and Motor Troubles and Their Remedies," by H. A. Jahnke, who is a very frequent contributor to *Power*. In this article, the author goes on to describe the difficulties he met with in taking charge of a 100 kw. belt driven direct-current dynamo. We quote direct the following:

"On examining the face of the brushes I found they were covered with copper due to cutting of the commutator. The dynamo was stopped and the copper cleaned from the face of the brushes. The commutator then received a good sand-papering and the brushes replaced. When the machine was started again, no sparking occurred with the load on, but in a few hours the same trouble reappeared, and the face of the brushes were covered with copper as before. The tension on the brushes appeared to be about right and a little oil was applied to the commutator to prevent cutting.

"Another set of brushes were tried, but with no better result. It was necessary to clean the copper from the face of the brushes every morning in order to keep the machine running ten or twelve hours without shutting down. We then came to the conclusion that the copper in the commutator must be very soft and decided to try graphite brushes, which we did and had no more trouble."

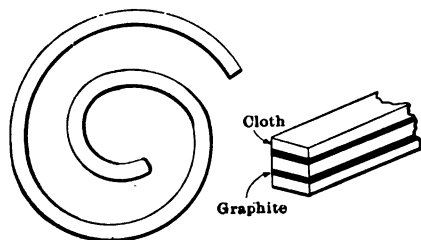


FIG. 1.

FIG. 2.

The third reference occurs under the article entitled, "Home-made Packing," contributed by Gus A. Janicke. The article states that this packing will last for six months or longer without renewing. The directions for preparing the packing run as follows:

"First cut strips of cotton cloth of a width to fit the stuffing-box and grease the cloth on both sides with drippings from the bearings of the engine. If the packing is for cold water, use linseed oil instead of grease.

"It is a good idea when preparing the packing for cold water to have it ready a week or more before using, so that the linseed oil may harden. The hardening will not affect the lubricating qualities. After greasing the cloth spread as much graphite as possible on one side of the cloth and flatten it

down with a hammer. I recommend flake graphite such as is used in the steam chests of an engine, both for steam or cold-water packing.

"Next place one piece of cloth on the other; as each piece is greased on one side and covered with graphite, they will stick together. Continue to place the cloth strips, one on the other, until the required thickness is obtained, put the packing in the stuffing-box and screw down the stuffing-box gland.

"It is a good idea to cut the cloth in a spiral form, as shown in Fig. 1, it will make a better fit around the rod than if straight. Fig. 2 shows how the packing is prepared."

It is especially gratifying to have the Dixon Company's experience substantiated with reference to the specification of *flake* graphite. Note that the writer recommends this particular form—yes, we are progressing.

SEVEN AGES OF WHEELS.

A wicker carriage we provide
In which the baby first may ride.

With kilts, a yellow cart arrives,
A doubtful billy-goat he drives.

In knickerbockers, down the pike,
He circuses upon his bike.

The age of love and gasoline
Demands a sixty-horse machine.

The years advance; he rides afar
In his palatial private car.

Old, feeble, if the day be fair,
His valet wheels him in the chair.

Then one last trip he takes on wheels
His head no higher than his heels.

DIXON'S MONARCH PENCILS.

A user of lead pencils in a large way, having gotten hold of Dixon's Monarch Pencils No. 2, in good time sat down and wrote the following clever note.

"Ye call them 'Monarch No. 2', and ye do well to call them 'Monarch', which we have found the best we have ever held between our fingers or behind our ear or had stolen from our desk.

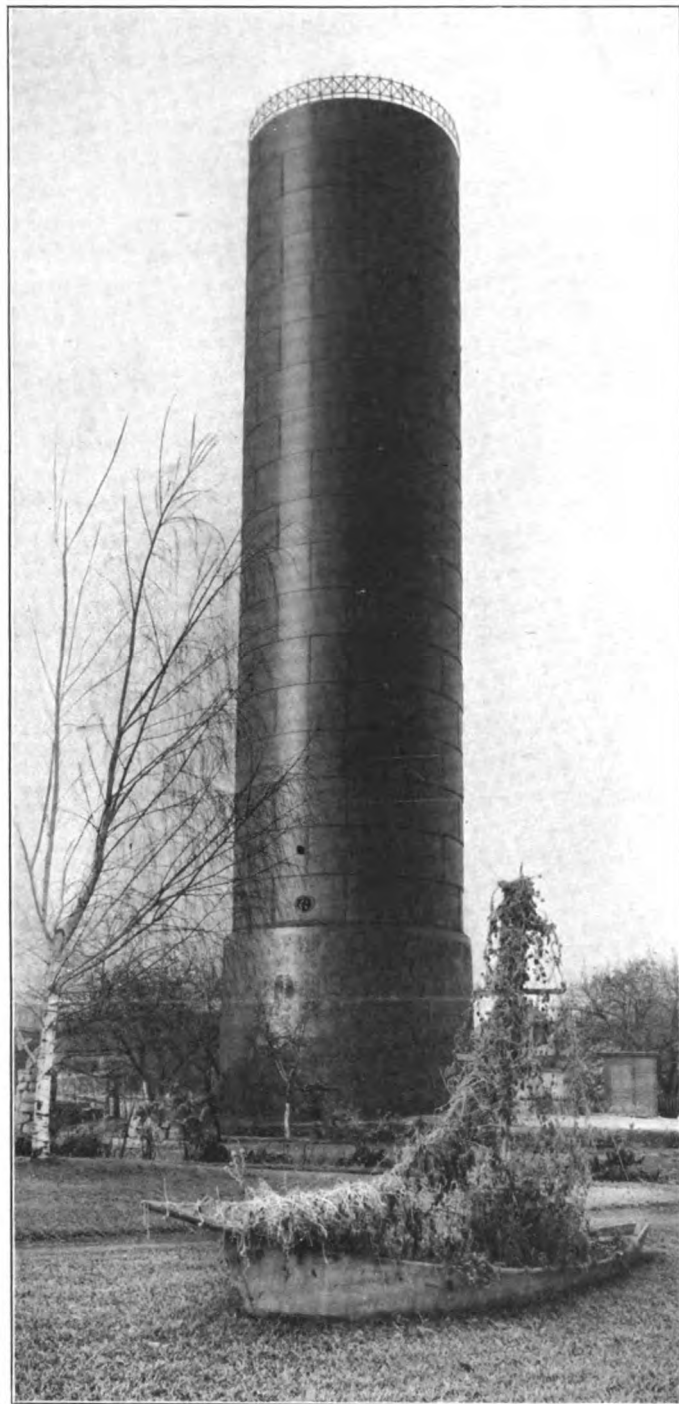
"If there is one among your pencils that dares rival the 'Monarch', send it along; yea, or if there be twelve among your collection, let them come forth."

"GRAPHITE A GREAT HELP."

An engineer in *The Engineer* says:

"Graphite is a great help to the lubrication of steam valves and cylinders when used with good judgment. It fills the minute niches in the iron and produces a very smooth surface. It also fills in the crevices around the joints and gaskets, keeping them tight."

The day is fast coming when Dixon's Flake Graphite will be quite as indispensable to the engineer and superintendent as the telephone to the business man.



**AN ARTISTIC WATER TOWER—AN ARTISTIC
PAINT.**

NOVEMBER 27th, 1907.

*Joseph Dixon Crucible Co.,
Jersey City, N. J.*

GENTLEMEN:—In reply to your favor of Nov. 13th, regarding the painting of the stand pipe of the Marion Water Co. with Dixon's Silica-Graphite Paint. This stand pipe is 95 feet high above stone base, 25 feet diameter, it was painted when put up twelve years ago with white lead; it had got very shabby looking, in Sept. 1902 I had it painted with Dixon's Silica-Graphite outside and in using 72 gallons. Our water is from lime stone and very hard, the inside of pipe was badly coated with scale, we cleaned it as well as possible but it took double the quantity of paint that the outside did.

Two years afterwards the inside was given another coat, using 32 gallons. This last Sept. I gave it a coat of Dixon's Silica-Graphite Paint outside, using 8 gallons. I did not think it needed it as it showed no signs of wear after five years, but owners thought I had better go over it again. I gave inside one coat from top to bottom, a week afterwards gave lower part about fifty feet up a second coat, using 30 gallons. I am satisfied that the outside will not need another coat in ten years.

Very truly yours,

F. R. SAITER.

GRAPHITE FOR PISTON RINGS.

Piston rings should be made to fit well and so hold the gases perfectly, for the escape of the gases not only causes loss of power but leaves the heat of the gases in the cylinder walls and also blows away the oil, with the result that the friction heats the walls of the cylinder rapidly.

The perfect fit of piston rings can be easily attained by the use of Dixon's Motor Graphite. The graphite fills up all the microscopical irregularities of the bearing surface, forming a veneer-like coating of graphite which is of marvelous smoothness and endurance.

AUTOMOBILE SPRINGS AS WELL AS CARRIAGE SPRINGS.

Whether it is because automobile springs are poorly put together or poorly cared for we don't know, but the fact is that it is very common to find that automobile springs are in poor condition; either they have become rusted, or they squeak and seem to have lost some of the qualities which go to make up an easy riding, smoothly acting carriage spring.

Many of the springs that we have inspected have been put together without the leaves being properly painted, in fact we have noticed that the leaves are seldom or never painted.

The leaves of all automobile and carriage springs should be painted with Dixon's Silica-Graphite Paint, or should be treated with a mixture of linseed oil and Dixon's Flake Graphite. When so treated the leaves glide smoothly one upon the other, the danger of breaking is greatly lessened no matter what the strain may be, and there is no possibility of rust or squeak. This is due to the lubricating nature of Dixon's Flake Graphite.

THE JOY OF LIFE.

By PRISCILLA LEONARD.

It wakes in the throat of the woodland bird
In the rose-flushed bush of the morn;
It gleams in the gold of the billowing wheat
And the tasseled pride of the corn;
It follows the feet of beauty and love,
It stirs in the strength of the strong,
And its light leaps up on the trampling field
Where bravery battles with wrong;
It sings through each deed that is nobly done,—
But sweetest, most undefiled,
It shines to the world in the world old way
From the face of each little child.

—*The Outlook*, Dec. 7, 1907.

LONDON ON MOTOR LUBRICATION.

From our London office we received the following items clipped from some English motor papers:

GRAPHITE AS A LUBRICANT.

In view of the interest now being taken in graphite lubrication, I may say that, from considerable experience with it, I formed a very favorable opinion of its value. For gear-box work a graphite grease of just the right consistency and really high quality is ideal. Quality is important, because common stuff is as likely as not to be weighted up with chalk, clay, and gritty matter, which are likely to do far more harm than good. When cylinder lubrication with graphite is considered, we are on somewhat doubtful ground. I have never risked mixing it with the lubricating oil either in the crank-case or oil tank. There is a much safer method of getting a film of graphite on the cylinder walls, and that is to blow it in through the sparking plug hole, using a small piece of rubber tubing, which can be pushed through the plug hole and pointed downwards; quite a small quantity, as much as would rest on a threepenny piece, should be inserted into the tube through a funnel made of a piece of notepaper. The piston, of course, must be at the bottom of the cylinder, and then a vigorous puff will blow the graphite out of the tube in the form of a cloud, and it will adhere to the oily surface of the cylinder walls. This method overcomes all risk of the graphite fouling the rings or depositing on the piston head. As regards shaft bearings, I have not found a really good way of applying it. About the best was to mix a little up with thin lubricating oil, disconnect the lubricating pipe union, and squirt a few drops of the mixture into the bearing. I have no doubt this does some good, as the very fine film formed on the shaft and bearing surface will last a considerable time. When an engine is taken down, it is a very good plan to take the opportunity of graphiting all frictional parts and rubbing some of the graphite well into the cylinder walls. A bit of soft rag tied to the end of a stick to form a pad is useful for this operation, and the quality to use is known as pure flake graphite.

In reply to "W. H.," I have used Dixon's Flake Graphite for some time now, and have not had any trouble. I do not put it in very frequently. I find more care is needed in lubrication of any kind when the plug is situated near the exhaust valve or in cylinder top. A very good tip is as follows:—After cleaning out cylinders, etc., to rub the cleaned surfaces with graphite. I do not leave any loose. In the correspondence as to whether engines run better at night, I have not yet seen the parallel brought forward that the sun shining on a fire will put it out, also a rubbish fire in the garden will often refuse to burn till sun down, when it goes merrily. Will someone tell us if the lubrication of the cylinders in V engines causes trouble through inequality? Also, has anyone tested whether there is in practise a difference in the horse-power of an engine with vacuum in the crank-case, and vice versa. I believe (ignoring theory), there is, and I am sure there is, less accumulation of oil on the piston heads (in engines that are run mostly on nearly-closed throttle) when there is some vacuum.—THOMAS HALLEWELL.

DIXON'S graphite publications sent free upon request.



Come to think of it, do you know of any other lubricating graphite besides Dixon's Flake Graphite that has the endorsement of such eminent authorities as Prof. Thurston, Prof. Goss, and others of repute?

Do you know of any other lubricating graphite besides Dixon's Flake Graphite that is in such universal use among practical and successful engineers?

Do you know of any other company besides the Dixon Company that has been marketing graphite for over 80 years? In other words, do you know of any other lubricating graphite besides Dixon's Flake Graphite that has stood and withstood the test of time, that has "made good?"

If you want the details, write for "Graphite as a Lubricant", copy No. 190.

Joseph Dixon Crucible Co.

Jersey City, N. J.

LEGISLATIVE CONTROL OF BUSINESS.

Radical laws are often nullified by the courts because in conflict with the written constitution, but once a law has been sustained by the courts they are bound to enforce it forever, regardless of changes that may occur in the conditions that led to its enactment. Few laws are repealed, and each year a large addition is made to the accumulation of generations. In the United States the popular demand for more and more laws must be obeyed by Congress, 46 legislatures, the various commissions and boards which exercise legislative powers, and the multitude of municipal bodies which have local jurisdiction. In recent years law making has taken the direction of regulating the minute affairs of business, and it is difficult to foresee the outcome.

The great railroad president goes about in fear and trembling, not knowing at what moment the hand of the law may beckon him to account for some act in which he was innocent of wrong intent; and the same fear haunts all his employees, from traffic managers and superintendents down to the station agent who works for \$40 per month. Laws which regulate the physical movement of traffic as well as the rates and financial affairs of a railroad have become so complex that it is impossible for the official or employee to know in all cases whether his acts are proper or unlawful. Experience and business ability offer no assurance that an act is right, and even an expert lawyer cannot tell in many cases what a court might decide in the interpretation of recent laws which it is physically impossible to obey.

The manufacturer is confronted with a multitude of laws which regulate the amount of smoke his chimney may emit, the conditions under which his men may work, and the manner in which he shall or shall not fix the prices of his products. All of these requirements, many of them necessary and salutary, are coupled with varying penalties of fines or imprisonment. The manufacturer must furthermore master the impossible by knowing the lawful rates on every article that he receives or ships, under dire penalties if he pays more or less than the complex and often invisible schedules which have been clothed with the sanctity of law. The merchant, in the same manner, is hedged about by laws and restrictions, which in the State of Texas have made it a felony if he deals in the products of a mysterious class of corporations that for all he knows may include the majority or all of the manufacturers whose goods he sells. The maker of food products may have his reputation blasted in a day by the summary seizure of his goods by Government officials on technical charges, where he has earnestly sought to obey the law. The packer has fallen so far from popular favor that he is not permitted to sell his products until they have been "inspected and passed" by representatives of the law.

The scope and severity of laws to regulate business affairs have vastly increased within a few years, and if the growth of legislation continues it will be a comparatively short time until every man who conducts an industry or business will be technically, at least, a law breaker. Even now few companies carrying on a manufacturing business of any magnitude can comply literally with all the requirements of legislation. The majority of the men who make laws to regulate business affairs have had little or no experience in bearing the responsibility of industrial or commercial undertakings, and

scarce one in a hundred of the masters of the ballot knows what will be the ultimate effect of the laws they demand.

When the English Parliament found itself in possession of the power to regulate the business affairs of an entire nation it prescribed the most minute laws to fix wages, the prices of grain and other commodities, and the ordinary methods of business, and the failure of one law only led to more stringent measures. Wages advanced in defiance of these laws, and the prices of commodities showed little inclination to obey legislative decrees; but for five centuries Parliament continued to fulminate on the ordinary affairs of business. Meantime England remained in a commercial and industrial rank inferior to that of Holland and the petty republics of Italy, and it was not until the mass of feudal legislation had reached the stage of decay that the English people were able to assert themselves in the world's trade. In the course of six centuries Parliament made the discovery that business affairs largely regulate themselves, in obedience to the desire of the majority of business men for fair dealing.

In the United States the wave of regulation and reform has reached a new high. It is yet to be seen whether with it has come a permanent subsidence of the foundations on which industry and trade have been built up. Undeniably, government supervision is to be a larger factor in business than it has been, but it seems equally certain that much that has gone on the statute books in the past three years will disappear under the sifting out process of the courts. Fortunately the judiciary is still of co-ordinate rank with the legislative and the executive branches of our Government, and the Constitution may still be invoked with confidence to stay the execution of legislation born of the prevalent hysteria.

—*The Iron Age.*

PLAZA HOTEL MOVING STAGE.

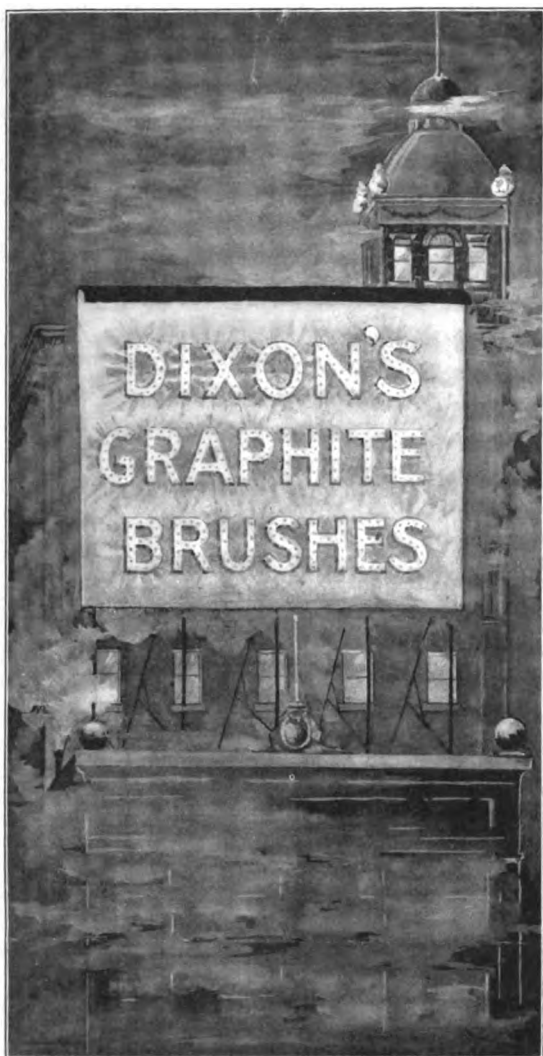
Unique and Interesting Feature of a Modern Hotel Equipment.

The *Record and Guide* of New York, has an interesting article on the moving stage of the Plaza Hotel of New York. The stage is in the ballroom, and when not in use as a stage it forms a gallery which in architectural finish corresponds to the finish of the ballroom.

The machinery of the stage is entirely concealed, a motor drives the mechanism. This motor drives two worm gears which are encased, and which in turn drive four heavy screw shafts. Upon these screw shafts bronze nuts travel, carrying crossheads to which chains are attached. The bronze nuts contain chambers into which a mixture of Dixon's Graphite and grease is forced by means of compression grease cups. The worm gears are continuously lubricated in the ordinary manner, and with entire satisfaction due in a very large degree to the marvelous smoothness and toughness of the graphite.

NEW YORK has 61 public parks. Pelham Bay Park is the largest, and contains 1756 acres, while the Beach Street Park is the smallest, containing only 1700 square feet.

Central Park contains 843 acres, Bronx Park contains 719 acres, Riverside Park contains 140 acres, Claremont Park contains 38 acres, and Battery Park, where the Aquarium is located, contains 21 acres.



INTRODUCTION.

In the year 1900 the Dixon Company installed an electric plant, consisting of engine with a 100 kw. generator (250 R. P. M., 250 volts, 400 amp.) and a number of motors running from 5 H. P. up to 15 H. P. This plant was used for generating power and light for the Pencil Lead Department.

Soon after the installation of this plant we began to have more or less trouble with the carbon brushes with which the generator and motors were equipped.

Knowing of the smoothness and conductivity and other qualities of graphite, we believed that we would be able to make a graphite brush that would give us better satisfaction than the carbon brushes in use. After some experimenting we manufactured a brush that not only proved equal but far superior to the ones that we were using. Still later we largely improved upon our brushes and began to market them.

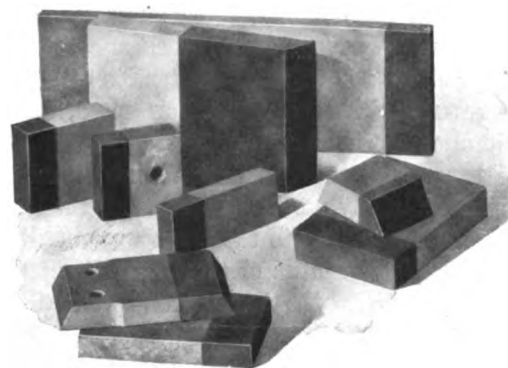
We may say in closing this introduction that now, in the year 1908, we have not since the installation of our electric plant had occasion to turn down our commutators; they are apparently in as perfect a condition in every respect as when first installed. At the present time we have added to our electric plant so that we have now three generators, two of 100 kw., as above described, and one of 300 kw. (100 R. P. M., 250 volts, 1200 amp.) and have about one hundred motors in use, all of which are equipped with the Dixon Graphite

Brushes and all of which are running as nearly perfect as any electrician could hope for or wish.

CONDITIONS OF SERVICE.

The subject of graphite brushes is an interesting one, but far too broad for us to attempt to discuss here for the reason that the conditions under which the brushes may be used are not uniform. Therefore we do not claim that the Dixon Brushes will be found as satisfactory by everyone as we ourselves have found them.

The engineer in charge of an electric motor may be right in attributing a greater loss in a graphite brush under the conditions of test than would exist if all carbon brushes, for instance, had been used; or he may be wrong in choosing his conditions. Perhaps he may not differentiate between contact resistance and resistance in the mass of the brush, and he may assume that a low resistance brush is the one to be desired.



We do not claim that the graphite brush is especially desirable for low voltages and high current density, for the graphite brush should have greater resistance and is best used in connection with high voltages. In view of its higher contact resistance, it should be used with a somewhat lower current density than a carbon brush.

Dixon's Graphite Brushes have a decided advantage because their losses from friction on the commutator are less than with carbon brushes; in addition, the commutator is always automatically lubricated, whereas with carbon brushes there are conditions under which applied lubrication is necessary.

The Dixon Company has met with most excellent results in marketing its graphite brushes, selling them very generally throughout the United States and in Europe as well, but the company has found engineers who could not successfully make use of them, and probably for reasons before given.

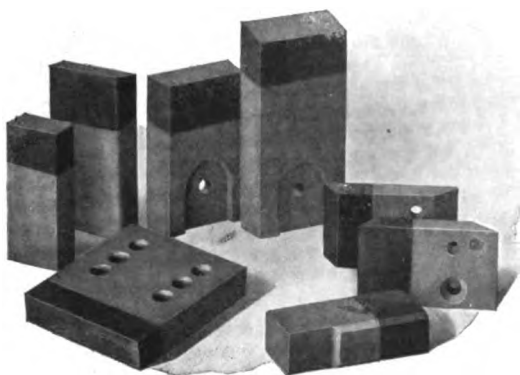
VARIABLES IN COMMUTATION.

The successful use of Dixon Graphite Brushes depends to some extent on the form and style of brush holder and on the amount of pressure to which the brushes are subjected.

In comparison with many makes of brushes the graphite brushes are soft, therefore the surface of the commutator on which they are to be used should be true and polished in order to insure uniform contact between the commutator and the brush.

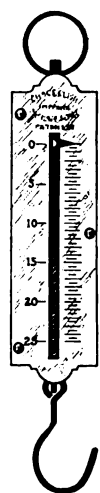
The results of tests and observations made show that there are many variables, beside the brush itself, which enter the

question of proper commutation. The vibration of the machines and the design of the brush holder are the most important variable elements.



As concerns the brush pressure it is impossible to set any arbitrary limits. Some engineers report the best satisfaction with low pressures, say about two pounds per brush, others find that for their machines the higher pressures, five or six pounds per brush or even more, are best used. Of course, high-speed machines will require more tension on the brushes than is necessary with machines of low speed, due to the greater vibration of the former.

It is, perhaps, well to advise as low a brush pressure as will give good results in any particular case, since the higher the pressure the more rapidly will the brush wear down. However, the lubricating qualities of the Dixon Graphite Brush prevent any damage to the commutator even with higher brush tension.



Any engineer can very quickly and conveniently test what pressure he is using by means of an ordinary spring balance. All that need be done is to hook the balance on the brush holder and lift until the brush clears the commutator. If the hook of the scale cannot be caught on the brush holder, a piece of ordinary cord can be passed around and caught on the hook of the balance. Nothing can be simpler, and every engineer should know what pressure he is using and if the pressures are uniform.

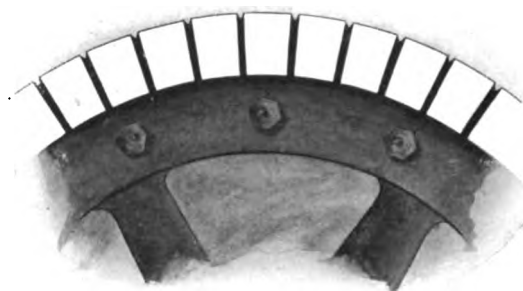
Some cases of supposed failure of Dixon Graphite Brushes have been reported to us when the fault lay with the condition of the commutator, examination of which showed that the mica insulation extended above the copper bars. In these cases the mica must be filed down with a three-cornered file to a slightly lower level than the copper bars. The cut shown herewith indicates how the commutator appears after the mica is filed.

To determine whether the mica is above the commutator bars, tie a silk thread around the commutator and carefully examine the contact under a magnifying glass. The silk thread roughly serves as a "gauge level" and will show the inequalities if any exist.

The filing of the mica is best done by an experienced electrician, and unless the engineer feels sure he can successfully accomplish it, we would advise against the attempt.

Sometimes, where neither carbon brushes nor graphite brushes alone give fully satisfactory service, a combination

of the two has proved advantageous. Usually they are arranged so that there is a graphite brush alternating with a carbon brush. In this way the lubricating effect of Dixon Graphite Brushes counteracts the objectionable grinding action of the carbon brushes.

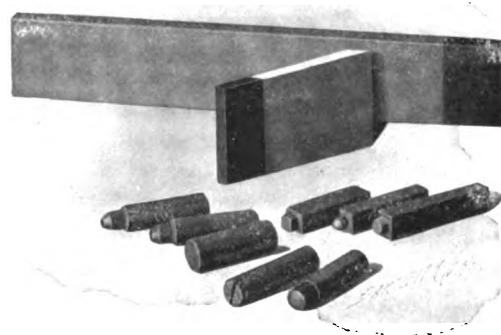


We are always glad to place our experience at the disposal of any user of Dixon Graphite Brushes. Problems that may arise can be submitted to our electrical department which will give personal attention to individual cases.

TESTS BY PROF. ALBERT F. GANZ.

For the convenience of users of Dixon's Graphite Brushes we give the following summary of the conclusions deduced from tests and observations made by Prof. Albert F. Ganz, of Stevens Institute.

1. Before Dixon's Graphite Brushes are applied to a machine the commutator must be given a true and polished surface. A rough commutator will quickly wear away graphite brushes.
2. No oil, vaseline or other lubricant must be used with Dixon's Graphite Brushes, but the commutator must be kept perfectly free and clean from such materials.
3. When a new graphite brush is inserted on a commutator, its surface should be fitted to the surface of the commutator by means of finest sand paper.



4. The brush holder should be so constructed that the entire contact surface of the brush is touching the commutator and that the brush pressure is evenly distributed over the contact surface of the brush.

5. For slow-speed machines with little vibration the lower pressures will give satisfactory results, while for high-speed machines with considerable vibration the high pressures must be used.

6. Where two or more brushes are used in parallel on one machine it is important that the brush pressure be the same for all brushes.

In a separate pamphlet we give sizes and prices. We have endeavored to obtain sizes of all brushes required, but have not succeeded. Where size wanted is not shown, please write and we will make prompt quotation.

**A FEW HINTS ABOUT GRAPHITE BRUSHES WHICH
MUST BE OBSERVED TO GET BEST RESULTS.**

First. Have the brushes securely fastened in the brush holder and slide a piece of No. 0 sandpaper under them and fit to the commutator.

Second. Sandpaper the contact surfaces and commutator occasionally, as the bearing surfaces of the brushes will take on a high glaze in time and may cause squealing. Let last stroke of sandpaper be in direction of rotation, if machine only turns one way. Use a strip of sandpaper a little wider than brush.

Third. It is absolutely essential that the mica strips be not higher than the copper bars, for Dixon's Graphite Brushes are not a grinding brush and will not grind the mica down.

Fourth. For best results, the spring tension should be low and generally not more than three pounds for any size brush. For low speed machines it may be lower.

Fifth. The commutator must be free from all dirt or oil.

Sixth. Don't soak Dixon's Graphite Brushes in oil or grease.

THACKERAY'S CREED.

(On reading his letters.)

By CHARLOTTE BECKER.

A willing kindness,
A ready trust;
A bit of blindness
To moth and rust.

A balm of laughter
For anger's heat;
A brave heart after
A sore defeat.

A glad hope, cleaving
To each new day;
A patience, leaving
No stony way.

A warm faith, summing
All life worth while—
Yet, at death's coming
A fearless smile.

—*New York Times.*

AND NO SPEED LIMIT, EITHER.

"He has a motor-car tongue."

"What do you mean?"

"Oh, he's always running other people down!"

—*London Answers.*

Productions of the Dixon Crucible Co.

Dixon's Black-lead Crucibles and Retorts, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

Dixon's Brazing Crucibles, made in several shapes for dip-brazing.

Dixon's Graphite Boxes and Covers, for baking carbons and filaments for electric lighting.

Dixon's Fine Office and Drawing Pencils, unequaled for smooth, tough leads and uniformity of grading.

Dixon's Colored Crayons, in wood or solid. For schools, railroads, editors or factory.

Dixon's Lumber Leads, black or colors; for green or dry lumber.

Dixon's Metal Workers' Crayons.

Dixon's Felt Erasive Rubber, for erasing pencil marks, type-writer work or ink.

Dixon's Carburet of Iron Stove Polish, the old reliable; in cake.

Dixon's Pure Flake Lubricating Graphite, a solid lubricant for all frictional surfaces.

Dixon's Special Graphite No. 635, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

Dixon's Electrotyping Graphite, used by the majority of practical electrotypers of this country.

Dixon's Hatter's Lead, for coloring hat bodies.

Dixon's Plumbago for Shot Polishing.

Dixon's Plumbago for Powder Glazing.

Dixon's Plumbago Foundry Facings.

Dixon's Yacht Plumbago, for lubricating and smoothing bottoms of yachts.

Dixon's Graphite Waterproof Grease, for gears, wire ropes, hoisting chains and general machinery.

Dixon's Graphite Axle Grease, for trucks, wagons, carriages.

Dixon's Graphited Wood Grease, for use on trolley car gears which are enclosed in a gear case.

Dixon's Graphited Oil, for use in all places where the use of a gear grease is impracticable.

Dixon's Graphite Cup Greases, for use in cups or open bearings, on spindles, shafting, etc.

Dixon's Oiled Graphite,

Dixon's Lubricating Compound No. 688, for enclosed gears of electric automobiles.

Dixon's Silica-Graphite Paint, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

Dixon's Graphite Pipe-Joint Compound, for steam, gas and water piping, smearing gaskets and flanges.

Dixon's Automobile and Bicycle Lubricants.

Dixon's Graphitoleo, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

Dixon's Commutator Graphite, will glaze commutator with the finish so much desired by electrical engineers.

Dixon's Graphite for Type Setting Machines.

Dixon's Graphite for Talking Machines.

Dixon's Motor Chain Compound, for transmission chains.

Dixon's Crucible Clay and Graphite Mixture, for lining and repairing fire boxes.

Dixon's Stove Cement, for repairing stove or range lining.

Dixon's Traction Belt Dressing, for leather belts.

Dixon's Solid Belt Dressing, convenient for those who prefer a solid dressing.

Dixon's Graphite Resistance Rods, from one-eighth to one inch diameter; any resistance required.

Dixon's Graphite Brushes, for motors, dynamos and generators.

Dixon's Graphite Products for Electricians.

Special circulars with detailed information sent on request.

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COLORS AND SPECIFICATIONS
JOSEPH DIXON CRUCIBLE CO.
JERSEY CITY, U.S.A.

Graphite

Vol. X.

MAY, 1908.

No. 5.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

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GRAPHITE AS A BOILER SCALE PREVENTIVE.

Considerable is being said *pro* and *con* regarding graphite as a boiler scale preventive; and the sum of it is that graphite is a good means to that end. But the boiler should be clean to start with, for the substance is a better preventive than cure of scale. The philosophy of it seems to lie in the ease with which flake graphite will attach itself to all the minute irregularities of the inner surface of the boiler, giving it a coating which has no effect whatever on the metal, although it is a good conductor of heat. Scale will not adhere to it as it does to the bare metal, and what does collect has been found to be much softer and easy of removal.

Authorities say that the best practise for introducing it is to mix it to a paste with kerosene oil, place it in the bottom of the boiler and turn the water in, when the graphite will be deposited where wanted. It should be remembered, though, that the boiler must be thoroughly cleaned, so that the graphite may attach itself to the metal of the boiler. Consideration of the foregoing will indicate the necessity for this.

—*The Threshermen's Review.*

WHAT TO READ.

If you have the "blues," read the twenty-seventh psalm.
If your pocketbook is empty, read the thirty-seventh psalm.
If people seem unkind, read the fifteenth chapter of John.
If you are discouraged about your work, read the one hundred and twenty-sixth psalm.

If you are all out of sorts, read the twelfth chapter of Hebrews.

If you are losing confidence in men, read the thirteenth chapter of I. Corinthians.

If you can't have your way in everything, keep silent and read the third chapter of James.

When your engine sticks, squeaks or runs hard and you don't know what to do, read "Graphite as a Lubricant" or "A Study in Graphite", and be happy and contented. If you haven't them we shall be glad to send them to you free of charge.

WARM FRIEND OF MICROBES.

French Scientist Tells What a World of Good the Little Things Do.

Microbes have a warm friend and admirer in Dr. Fernbach, member of the French Faculty of Sciences, who delivered a notable lecture yesterday at the Sorbonne in their defense.

The learned scientist declared that while there were many bad microbes, the vast majority of them seemed to be good and useful. The role they played in the industrial life of the world was now fully recognized. In bringing about the decomposition of organic matter certain microbes liberated materials which were of the utmost use to mankind. Microbes favored fermentations. They took an important part in making the wines for which France is famous. Without them French bread, equally famous, would also be unknown. They helped man to manufacture beer and butter and cheese.

The civic virtues of the microbe also were proved by the part he played in purifying the tons of material passed daily through the sewers of Paris.

Mankind, the doctor said, was only beginning to learn how to direct the forces of this unseen but beneficent auxiliary to his own greater welfare.—*The New York Times.*

WINNING OUT.

The superintendent of an important iron industry writes us that he has about one half a barrel of Dixon's Flake Graphite on hand, and when any more lubricating graphite is wanted for the blowing engines, he will surely use Dixon's.

Sometime ago they bought a barrel of other graphite on the statement that it was better because it was not a flake graphite. They bought it for 25% less money, and this is the last time they will ever use it as it proved very unsatisfactory, didn't do the work, and was very heavy.

He adds that while Dixon's Flake Graphite costs more in the first place, it is easily overcome by an experienced engineer in using less and getting the good results, against a cheaper graphite and getting poor results. Nothing but Dixon's for him in the future.

GOOD ROADS IN NEW JERSEY.

Away back in the early days of the bicycle New Jersey was famous for its good roads, and although New Jersey now has more and better improved highways in proportion to size than any other state in the Union, the work of road improvement will be prosecuted during 1908 with unabating energy.

ESTABLISHED 1827.



INCORPORATED 1868.



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JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
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REVIVING THE BICYCLE.

When the bicycle ceased to be a fad there was still a good many people who believed that its popularity would revive later. Nevertheless, the sport of riding the wheel seemed to be pretty dead, the collapse being at its worst in 1901. In 1904 only two hundred and fifty thousand bicycles were manufactured in this country. But in 1907 the number rose to seven hundred and fifty thousand, and during the present year no fewer than one million two hundred and fifty thousand new wheels will be turned out in American factories.

These figures, which are official, afford the best possible proof of the revival of popular interest in bicycling. Undoubtedly it was the very excess of the craze that did the most damage. People overdid the amusement and became tired of it. But a great many of them are taking it up again, and thousands of men who have not bestriden a wheel for a half a dozen years are buying bicycles.

The bicycle dealers say that such men are dropping in

every day to purchase wheels. One says that he is tired of riding on street cars and holding on to the strap. Another declares that he does not feel as well as he did when he rode a wheel every day. A third has decided that he misses the fun that he used to have when a bicycle was always ready to take him anywhere. Besides, walking is a laborious method of locomotion, comparatively.

But it is also to be considered that the employment of the bicycle as a vehicle of practical utility is greatly increasing. Many business firms keep on hand and utilize from a dozen to fifty wheels. Thus an electric-lighting concern will have thirty or forty bicycles, perhaps, on which its men go about to make repairs and to attend to various odds and ends of work. Goods are delivered and advertisements are distributed by wheel. Indeed, the bicycle has here become indispensable.

Then, too, the comparative cheapness of bicycles at the present time is an important help to the restoration of their popularity. For forty dollars one can buy a more satisfactory wheel to day than could be purchased for one hundred dollars when the frenzy was at its height ten years ago.

—*Saturday Evening Post.*

IN THE March issue of *Motor Print* occurred a rather interesting article entitled "Accidents: Causes and Results," by Thompson Vance. This article deals with accidents occurring to users of motor cars. The statistics were compiled by the Travelers' Insurance Co. We quote the following verbatim:

"Out of 167 cases of accident reported, and not fatal in their nature, 61, or nearly 37 per cent. were due to misadventures while cranking a gasoline motor. Thus a danger, least considered of all, is found to outrank others even despite the fact that the driver alone attends to the motor, while in case of an upset, as many as seven persons may be projected into the highways or hedges, and more or less affected in consequence. Such accidents, as a matter of fact, are second in the order of prevalence, and measure about 20 per cent. of the total. Again, the supposedly safe occupation of caring for the machine is found to be of more serious risk than might be supposed, in that 17 per cent. of the 167 victims were injured more or less seriously while working on cars of one sort or another. Equally dangerous, it would seem, are collisions, but no more so. Seven per cent. of the same number of persons were injured while getting in or out of cars. Curiously enough, 3 per cent. of the accidents were due in one way or the other to bursting tires."

The writer of the article then goes on to soliloquize and points out that the timid ones may find considerable solace in the fact that the greatest part of risk is assumed by the driver in comparison with which the passengers risk is small.

He further emphasizes that the accidents occurring as a result of cranking provide, perhaps, the strongest argument for self-starting motors.

AN EXPERIENCED boiler inspector for a well-known insurance company told the writer some years ago that pitting could be stopped by applying a mixture of fish oil and graphite to the affected places, the graphite filling in the pits; the mixture being applied with a brush.—*National Engineer.*

PREVENTING CORROSION OF STEAM MACHINERY.

By W. H. WAKEMAN.

Chapter I.

Several years ago there was an apparent demand for more machinery in a certain plant, consequently it was purchased and installed. Soon afterwards the demand for it ceased, hence it was shut down and allowed to stand idle and neglected for a long time. The steam engine that formed part of the outfit was an up-to-date machine at that time, and there are but few better engines in the market now. When it was no longer required for use, the throttle valve was closed the same as it was for the purpose of stopping it every night, and nothing more was done to prevent rust and corrosion from destroying it, or at least rendering it unfit for service if it should be wanted in the future. About five years elapsed and it was then wanted to drive machinery, therefore the superintendent issued orders to have it started and used again. The engineer who received these orders reported that the engine could not be started at once, as it was necessary to take out the valves, remove the piston, etc., in order to ascertain if it was in good condition for hard service. The superintendent objected to this delay and expense, as he believed that it was only necessary to oil the bearings, admit steam to the cylinder and all would be satisfactory.

In another plant it is customary to use the heating system during the winter, then shut off the steam from the pipes and other appliances, including a duplex pump and receiver on a common base, and allow the whole to stand neglected until wanted for further use.

Other plants have been shut down for various periods and observation of the neglect of some, and the intelligent care given to others, together with the natural results secured in such cases, has suggested these articles which should be both interesting and instructive to all who are employed in or are responsible for this class of work.

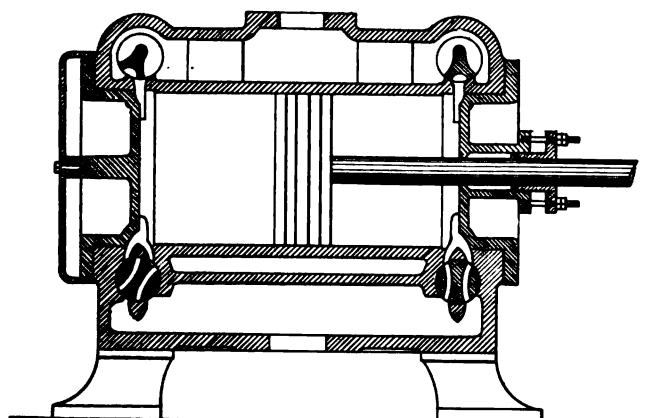


FIG. 1.

Where a plant or a portion of it is to be shut down for two or three months, and then started up again, it requires different treatment from what is necessary when it is to remain idle for an indefinite period, not only so far as preventing it from rusting and corroding is concerned, but also as regards to making changes and repairs during the time avail-

able for this purpose. If a plant is to be abandoned on account of discontinuing the business for which it formerly supplied power, the requirements are different still, for under ordinary conditions such a plant will not be repaired, but it should be well protected from corrosion, because it will probably either be used again in its present location at some future time, or else it will be sold and removed to other quarters. In either case the slight expense incurred by treating it properly will be amply repaid by the saving made in the cost of preparation when the machinery is to be used again, or if sold it will bring a higher price on account of being in good order in this respect.

As there are thousands of Corliss engines of various kinds in use (for when this kind is mentioned it no longer means a certain definite design), they will be presented first and given due attention, taking an improved form to illustrate and explain the points of interest.

Fig. 1 is a vertical section of the cylinder, piston, rod, stuffing box, valves and ports of a modern Corliss engine. When such an engine is shut down for either a long or a short period, the first thing to be done is to remove all packing from the piston rod stuffing box. This applies to both metallic and fibrous packing alike, as either will cause corrosion of the rod in a short time if left in contact with it. If the engine is to be shut down for only a week or two, the labor of removing this packing may be saved as follows. Run the rod out of the cylinder as far as possible, then cover it completely with Dixon's Oiled Graphite No. 7847 and move it

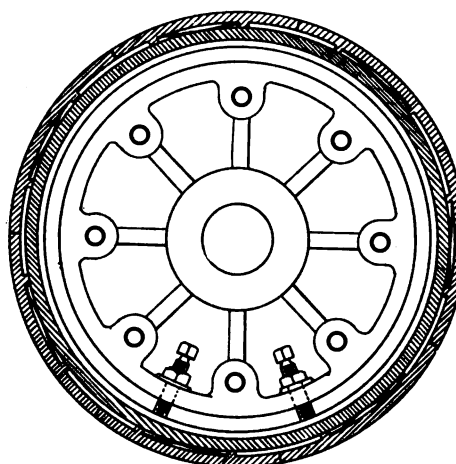


FIG. 2.

back to about mid-stroke, thus providing a thin coat of this anti-corrosive preparation between the packing and the rod. Do not depend on this treatment to preserve the rod for several months, as it is not recommended for this purpose. Unless the packing is removed we cannot be certain that every part is protected, but it will answer for the time above mentioned. Sufficient attention is not always given to this point in general practise, for under some conditions a rod that is not especially protected will rust considerably in two days.

There cannot be a sharply defined line drawn between short and long periods in this connection, but when the short one is mentioned in these chapters it means about three months more or less, and when the long one is referred to, it is, say, six months or more.

The cylinder head must be removed and if it was packed, the old gasket should be thoroughly scraped off. As a general rule such a head is fitted to the cylinder with a ground joint that does not require packing, in which case it should be given a coat of kerosene oil to loosen and remove any dirt that has accumulated here, without injuring the well fitted surfaces. A piston that is fitted with improved sectional packing rings is shown in Fig. 2. These should be taken out and cleaned. Observe their condition, also see that the springs are in good order. Disconnect the piston rod and take it out together with the piston. As the cylinder is now open for inspection, examine it thoroughly, and if it is badly scored, or is worn larger in some places than in others, have it rebored, if it is shut down for only a short time. It is well to remember in this connection that a cylinder may be very smooth, so that it shines like a mirror and still need reboring badly because it has not worn evenly. Before closing it up

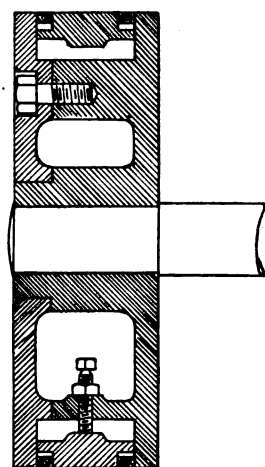


FIG. 3.

give every square inch of its internal surface a thick coat of cylinder oil mixed with Dixon's Special Graphite No. 635. The cylinder of an engine is of sufficient importance to demand special care, hence this mixture ought to be carefully rubbed down to insure perfect contact of the preserving compound with the iron surface. If this is done it will last a long time.

Cover the piston rod and the spider with the same preparation and put them back in place. Again referring to Fig. 2, which shows one sectional packing ring composed of many pieces. These may be put back where they belong, but care must be taken to cover every part with cylinder oil to exclude moisture. Fig. 3 is another view of the same piston, showing that it contains two sectional packing rings, both of which should be carefully treated as above described, as even a little corrosion will ruin these important parts.

When this is finished and the piston rod is brought to the center of the cylinder by means of the adjusting screws shown, put on the follower plate (after covering it with cylinder oil), and adjust the bolts ready for service.

Fig. 1 shows a nicely fitted cylinder head, but this ought not to be a tight fit as it might cause trouble. Several years ago I had charge of an engine on which the cylinder head on the head end was a tight fit, as the makers took pride in making what they considered a good machine. When an

attempt was made to remove this head in order to adjust the piston, it could not be started. The nuts were loosened until they did not touch the flange and the engine was run for one week in this condition under 80 pounds pressure, but the result was unsatisfactory, as the corroded joint was not loosened. The next move was to drill a row of holes entirely

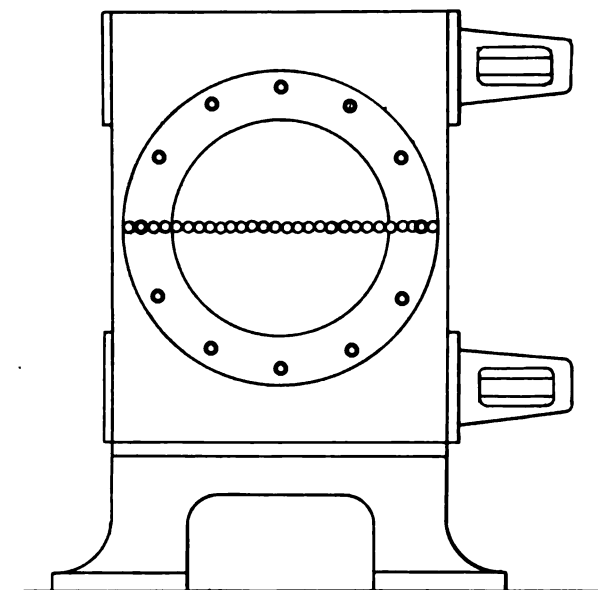


FIG. 4.

across the head as shown in Fig. 4. This caused the head to collapse and it was thus taken off.

This was a costly job because it was necessary to drill the holes by hand with a ratchet drill, and as this could not be done during regular working hours, an extra price per hour was charged for it, all of which could have been saved if the

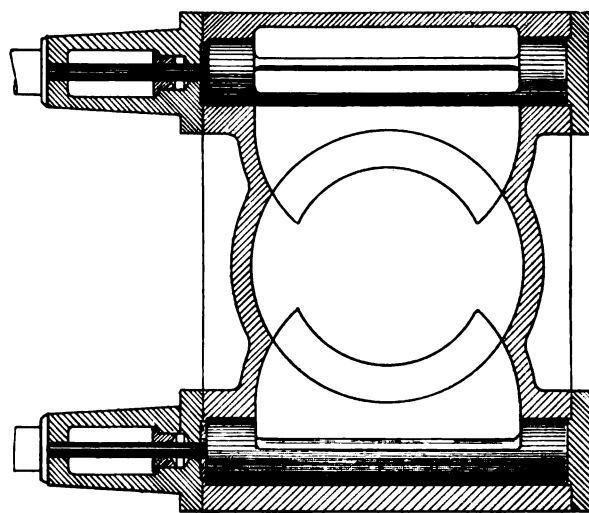


FIG. 5.

part in contact had been thoroughly coated with Dixon's Graphite before they were put together.

It is not necessary to repack the cylinder head at this time, but if it is fitted with a ground joint, clean it thoroughly, coat it with cylinder oil and put it on permanently.

Fig. 1 shows the steam and exhaust valves of this engine. If they are allowed to remain resting on their seats without

due attention, both parts in contact will be ruined by corrosion. This can be prevented by taking out the valves and coating them with either of the above mentioned preventives, provided they are to remain idle for a short period only, in which case they may be put back at once ready for service.

If the engine is to remain idle for a long period it is better to coat them and their seats with Dixon's Waterproof Graphite Grease, as it will exclude air and moisture, thus preventing corrosion. When this is used the valves should be left out of their regular places, but kept where they will be dry and safe from disturbance.

Fig. 5 is a side view of these valves, which also shows their stems and bearings. If these stems are packed with fibrous packing, it should be removed, and if a ground joint is provided just inside of the steam chest, it ought to be cleaned, dried and treated as the cylinder was to prevent corrosion.

(To be Continued.)

GRAPHITE AS A CARBON KILLER.

To the average man who cares for his own car, one of the greatest bugbears is the formation of carbon on the cylinder walls and piston heads, and the necessity which it breeds of occasionally dismantling the entire motor in order to get at the parts and chip the carbon off. Despite numerous suggestions no other method than this seems to be available for effectually getting rid of the formation, and no sort of care in the manipulation of the engine appears to be effective in entirely preventing its formation. A novel suggestion has recently been made, however, to the effect that if the parts are thoroughly coated with graphite the carbon will not stick, but will be discharged through the exhaust, leaving the surfaces perfectly clean and free from the objectionable roughness. One who has tried this method vouches for it, and says that after running a motor for more than 9000 miles with graphited coating, he found practically no deposit on dismounting the cylinders. The user in question is an English commercial traveler who covers something like 15,000 miles annually, and presumably knows what he is talking about. The method of treatment he employed was simply to smear the exposed surfaces thoroughly with a paste consisting of plumbago mixed uniformly with gasoline to the proper consistency and applied to the parts after they had been thoroughly cleaned.—*Motor Print.*

NO SUCH THING AS PULLING.

Sir Oliver Lodge Says It's Pushing That Moves Things Along.

Sir Oliver Lodge has opened up a new subject of discussion. In an address the other day he said that there was no such thing as pulling.

To speak of a horse pulling a cart was, he said, incorrect. The horse did not pull the cart. It pushed against its collar and thereby produced motion in the cart.

Similarly, the oarsman pushed the water, and the man drawing a handcart had to clasp the handle, and the driving force was caused by the part which clasped the handle, and was, therefore, behind it.

Even if the cart was fastened to the man's coat tail he did not pull it. He pushed against his clothes.

—*The New York Times.*

What Do YOU Use In YOUR Gear Case?

The transmission is one of the vital parts of your car. Excessive friction here means constant loss of power, dangerous wear and disagreeable noise. Isn't it possible to improve the lubrication here?

Dixon's No. 688

This is known as Dixon's Graphite Wood Grease, No. 688. It is a high grade graphite grease, with which is incorporated some finely ground cedar sawdust. The gear teeth are perfectly protected against abrasion and wear, mesh easily, run quietly.

Those who use it recommend it highly. Where any grease may be used Dixon's No. 688 will give the best results.

Dixon's No. 677

Where there are exposed ball bearings or small oil holes leading from the transmission case, Dixon's No. 688 is not recommended. In such cases Dixon's Graphite Grease No. 677 should be used. This lubricant is much lighter than 688 and contains no wood fibre.

Naturally the flake graphite contained in this lubricant makes it more durable than a plain grease.

Write for Information

We shall be glad to send you detailed information concerning the use of these transmission lubricants, and free samples too. We've a new booklet on this subject.

Joseph Dixon Crucible Co.
JERSEY CITY, N. J.

CRUCIBLE ECONOMY.

The three principal factors of cost in operating a brass foundry, aside from the labor, are: first, the metal; second, the fuel; third, the crucibles. When the metal is received it is carefully weighed and scrutinized and so is the fuel, and every precaution is taken to insure economy by careful purchasing, but strange to say there is a large percentage of foundrymen who pay very little attention to the item of crucibles.

FALSE ECONOMY OF FIRST COST.

The first cost seems to be the attractive feature, and the maker who sells at 4½ cents, when his competitor's price is 5 cents per number, is very liable to get a fair share of the business. When we ask the question: "How many heats do your crucibles average?" we too often receive the reply: "Oh, somewhere about twenty-five or thirty." We believe there are comparatively few of our friends who realize what an enormous difference in the actual cost of crucibles would result if they went twenty-five instead of thirty heats, and

of tags to be determined by the number of furnaces in operation.

When a new crucible is started, one of these tags is assigned to it and remains with this particular pot until it fails. When the crucible is in the fire the tag hangs through the grating on the floor or on a nail behind the furnace, or on the counter-balance chain—if this style furnace is in use—or any convenient place where it is handy. When the pot comes from the furnace the tag is hooked onto the crucible opposite the lip, or onto the shank, and is kept with the pot until it goes back into the fire again. This operation reminds the furnace man that he must give this particular pot credit for a heat and the printed form, which should hang on the wall handy to the furnace, is ruled off with plenty of room for the tally marks.

For example, if No. 3 is on the tag, the tally mark is made opposite No. 3 on the tally sheet, and, when the pot is finally used up, the cause of failure is noted and entered and the total heats figured up and inserted in the proper column. The tag is then assigned to a new pot and a new record started for No. 3 tag.

CRUCIBLE HEAT RECORD

Made By _____				From <i>Nov. 5th</i> To <i>Nov. 12th</i>		
MAKER	SIZE	KIND OF METAL	TAG NO.	TALLY NUMBER OF HEATS	TOTAL HEATS	CAUSE OF FAILURE
A	50	Pure Copper	1	||||	29	Wore thin
B	"	"	2	||||	27	"
C	"	"	3	||||	25	"
D	"	"	4	||||	21	Cracked
A	"	Yellow	5	||||	42	Wore thin
C	"	"	6	||||	35	"
C	"	"	7	I	1	Scalped
D	"	"	8	||||	33	Wore thin
D	"	"	9	||||	28	"
A	"	"	10	||||	37	"
A	"	Red	11	||||	34	"
C	"	"	12	|||	8	Leaked
B	"	"	13	||||	28	Wore thin
			14			
			15			
			16			
			17			
			18			
			19			
			20			

how many would believe the statement that a difference of one heat would make a difference of ¼ cent per number in the value. Nevertheless, such is the case, as evinced by the cold, hard figures which we submit here.

KEEPING A CRUCIBLE RECORD.

We believe that one reason why more foundrymen do not keep an accurate record of their crucibles is because an easy method of doing so has not been generally understood.

The only equipment required will be a number of good sized tags, such as are used on hotel keys, the larger the better, to be attached to the pots or shanks by a heavy copper wire hook, and numbered consecutively from No. 1 up, the number

This record provides for ten furnaces duplicated on each leaf. If not so many are in operation, the balance of the leaf may be left blank. In case eleven or more furnaces are operated, simply place a figure 1 before each number below the dividing line and the record will then answer for twenty furnaces on one leaf.

VALUE OF THE TAG SYSTEM.

The foundryman usually has so much to look after that it is hard to get him in the habit of keeping an accurate crucible record, and we cannot blame him. He forgets the tally for three or four days and then discovers that it has been overlooked and goes to the slate and chalks down what he thinks

is correct and lets it go at that. By the tag method the work becomes automatic and the placing of the tag is a reminder each time of the tallying of the heat. Furthermore, the superintendent, in walking about the foundry noticing a pot without the proper tag attached, is able to call attention to the fact that the record has been neglected.

At night, or at any time when the crucibles are not in use, the tags remain with them just the same and this prevents their getting mixed or attached to the wrong crucibles. A specimen sheet, as shown on the opposite page, will be found attached to the tablet, showing the method of keeping the record.

After a sufficient number of crucibles have been used to warrant a comparison, a summary can be made up which will give the whole thing at a glance, and reference to the summary shown here, *which is an actual record made by one of the largest brass foundries in the country*, will we believe make no further argument in regard to the advantage of keeping such a record necessary.

number, based on service, or, putting it another way, were only worth 4 cents per number.

We wish to call your attention to another interesting thing in connection with this report. The number of heats obtained on a No. 60 crucible was greater than on No. 50, melting the same kind of metal. Usually the larger the pot the less number of heats, and this is just the reverse. It is probably accounted for by the fact that the No. 60 was better fitted to the size of the furnace, and we would merely say in passing that this question of coke space around the crucible plays an important part in its efficiency.

DOLLARS AND SENSE.

To go farther into detail, we might say that this record shows that the total loss in dollars and cents caused by using other than the Dixon crucibles was \$58.10, or 38 cents per crucible, and we do not think there can be any controversy as to whether this amount is worth saving.

It is apparent that we would not advocate the keeping of

SUMMARY OF CRUCIBLE HEATS.

Maker	Size	Crucibles Tested	Total Heats	Average Heats	Highest No. of Heats	Lowest No. of Heats	Crucible Cost per Heat	Actual Value of Crucibles Based on Service	Actual Cost of Crucibles Based on Service
A (Dixon)	50	21	434	20.7	24	15	12.1c.	5c. per No.	5c. per No.
B	50	7	138	19.7	20	19	12.7	4.76 "	5.25 "
C	50	16	303	18.9	22	13	13.2	4.57 "	5.48 "
D	50	38	691	18.2	22	15	13.7	4.40 "	5.69 "
E	50	18	328	18.2	20	12	13.7	4.40 "	5.69 "
F	50	17	306	18.	23	14	13.9	4.35 "	5.75 "
A (Dixon)	60	71	1592	22.4	26	20	13.4c.	5c. per No.	5c. per No.
D	60	34	680	20.	22	19	15.	4.46 "	5.60 "
B	60	7	135	19.3	20	19	15.5	4.31 "	5.80 "
C	60	16	286	17.9	22	13	16.7	4. "	6.26 "

Metal Melted: Pure ingot copper.

Time of Heat: $1\frac{1}{4}$ to $1\frac{3}{4}$ hours. This accounts for the seemingly low average of heats.

RESULTS OF A TEST.

The total number of crucibles in this test was 245, of which 92 were of the Dixon make, five other makers being represented. It will be noted that on the size 50 crucible the nearest competitor to Dixon averaged but one heat less, and this difference of one heat makes $\frac{1}{4}$ cent per number difference in the actual cost. It will also be noted that the highest number of heats, obtained from a Dixon No. 50, was twenty-four and the lowest fifteen, and that Maker F ran twenty-three and fourteen respectively; only one heat difference, you may say, but, when the average is obtained, we find that Dixon is 2.7 heats ahead, and this makes a difference in actual cost of $\frac{3}{4}$ of a cent per number.

The difference on the No. 60 crucible is still more apparent, the nearest competitor being over $\frac{1}{2}$ cent per number away.

It will also be noted that Maker C's crucibles, costing originally 5 cents per number, actually cost over $6\frac{1}{4}$ cents per

the accurate record unless we were convinced we were able to deliver the goods that would stand at the top of the list. We do not claim that every Dixon pot will run a greater number of heats than a competitor's, but we are thoroughly convinced that in the long run they will be found considerably in advance of the procession.

We are fully aware that in some foundries, where an assortment of sizes are used and various kinds of metal are melted, it will be a pretty hard matter to make an accurate comparison, but nevertheless the record, if properly kept, will prove interesting reading, not only to the boss in the office but to the superintendent and melters as well.

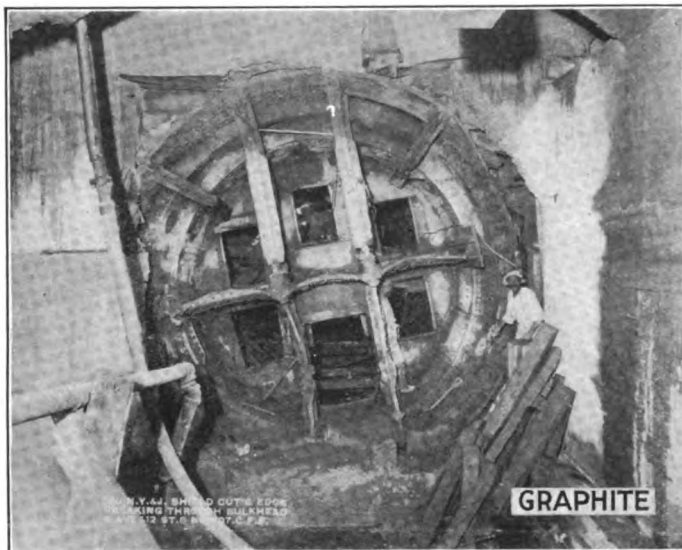
A mixture of lead wool and graphite is now being successfully used for packing valves.

—*Engineering and Mining Journal.*

THE HUDSON TUNNELS AND HOW DIXON HELPED.

Acknowledgment is made to the Hudson Companies for their courtesy in assisting in securing the information contained in this article; also for supplying the photographic prints from which the accompanying illustrations were made.

"The mills of the Gods grind slowly but they grind exceedingly small." This phrase comes to mind when the history of the Hudson Tunnels is read. Begun over 33 years ago, the work was subjected to various delays caused by litigation, inefficient methods, and shortage of funds; but the tunnels are now a reality, a triumph of modern engineering.



View showing cutting edge of shield breaking through a bulkhead.

The *Engineering News* in a recent issue gave what was called an "Historical Summary" that reads like a disconnected diary and serves to emphasize the drawbacks to which the tunnel was subjected. It is not our purpose here to go into details concerning the early history of this work. However, from the issue of the *Engineering News* just mentioned, we quote concerning what is called the "Third Period."

"Work was resumed early in 1902 under Charles M. Jacobs as Chief Engineer, by company labor. The old shield in the New Jersey North tunnel was used, with the addition of a 6 foot horizontal apron on the center line, and a shield built for the South tunnel; no attempt was made to advance the New York headings, which had been closed off by brick bulkheads at an earlier period.

"The financial or administrative history of this period is not known in detail. The New York & Jersey R. R. began the work, under Mr. Wm. G. McAdoo as President. In 1903 this was merged with the Hudson & Manhattan R. R. Co., organized to build two tunnels from a point under the Pennsylvania R. R. station at Jersey City to Cortlandt and Fulton Streets, New York. Still later, in 1905, a corporation was formed under the name The Hudson Companies, to conduct the construction and real estate operations for the Hudson & Manhattan R. R. Co. Under this arrangement the enterprise still remains.

"The North tunnel was holed through on March 11, 1904.

"The South tunnel was then pushed ahead rapidly, much

use being made of the method of advancing by closing the shield doors and shoving ahead without excavation. Phenomenal rates of progress were recorded with this method, as much as 62 feet being done in 24 hours, and 348 feet in a single week!

"The rock reef near the New York shore was the chief difficulty. Here clay was dumped into the river over the tunnels as a blanket, and successful use was also made of the scheme of heating the silt face of the heading with torches to dry out and bake it, in order to enable drilling and blasting to go on in the rock projecting up into the lower part of the section. The apron proved an invaluable aid here.

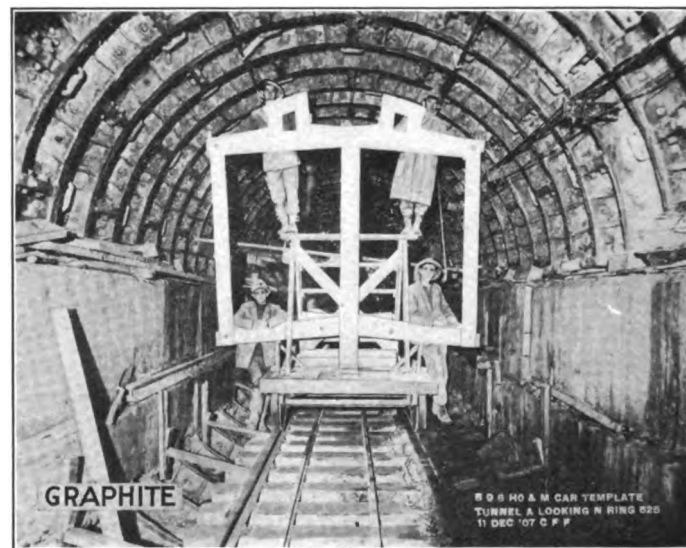
"The South tunnel was made smaller in diameter than the North tunnel, as its size was not fixed by any existing shield. The South tunnel is 15 feet 3 inches inside the lining and 16 feet 7 inches outside, the flanges being 8 inches high.

"The old portions of the tunnel, which were very irregular in line and grade; were 'faired' as much as necessary by cutting and adding lining concrete. The West end of the South tunnel, which had dropped to a 6% grade in the old work, was cut through from the new portion on a flat slope, so as to reach a level entirely below the North tunnel in the approach section. This made it possible to avoid crossing at grade at the junction Y with the north-south line in Jersey City.

"The New York City work was done by shield tunneling to Twelfth Street and Sixth Avenue. The part north of this is a reinforced-concrete section.

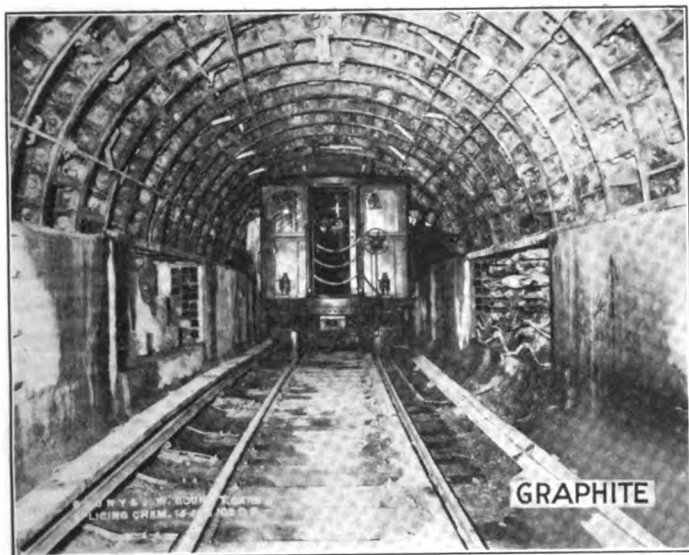
"The South tunnel was holed through on September 30, 1905. Its entire length of about 5,100 feet was excavated in 334 actual working days, an average of 15 3 lin. feet per day."

While we are on the subject of the improved methods



View showing car template.

introduced in the "Third Period," it may not be out of place to tell how Dixon helped with the tunnel. On the air compressors, which provided the compressed air so vital to the method of construction, Dixon's Flake Graphite was used for lubrication. Especially in cases of cut or scored valves it was demanded as the only lubricant that could restore to perfect working order the injured surfaces.



View showing passenger car in tunnel; also splicing chamber.

A special Dixon Graphite Grease was provided for use on the special Wonham Magor wheels with which the dump cars were equipped.

Dixon's Pipe-Joint Compound was employed on temporary piping used in the tunnel. Dixon's was selected here, no doubt, because of its ability to make a tight joint and yet permit of its being unmade easily when desired.

There were several other Dixon products used, such as paint, waterproof grease, and marking crayons. We were unable to learn the specific application of these last, but are none the less pleased that they were specified by the "men who know."

GAS ENGINE PACKING MATERIALS.

To make an asbestos packing more pliable and cause it to be pressed more thoroughly into the packing grooves some gas engine makers advise dipping into boiled linseed oil, or even water, before applying it to the cylinder. In many cases this improves the life of a packed joint, but the packing must not be soaked too long or the fibers of asbestos will separate, making the packing useless before it is applied. A coat of flake graphite on one side of the packing enables a cylinder head or valve casing to be removed later without destroying the packing in use; the side of the packing not covered with graphite adheres firmly to the cylinder, while the other side detaches itself easily from the head or valve casing. Special packing materials consisting of asbestos interwoven with wire may prove beneficial in certain cases where a plain packing cannot be made to stand, but they will not serve as a cure of leakage troubles, primarily due to an uneven metal surface. To obtain satisfactory results from a packing, the first requisite is a true surface of the joint to be made tight. Rubber packings in a gas engine can be used only at the open end of a single acting cylinder, where the temperature of the surrounding metal is low enough not to rapidly deteriorate this material. Under no circumstances should packings containing rubber be used in joints in the cylinder or valve casings at the combustion end of the engine.—*The Iron Age*.

COATING BOILER TUBES.

Coating the inside of boiler tubes with a thin layer of graphite, says *The Electric Railway Review*, has given excellent results in a boiler plant using water containing excessive amounts of scale-forming salts. These deposits have required frequent drilling of the tubes. It was found by experience that much less scale adhered to the tubes coated with graphite and that the scale which did form was far more easily removed from them than from uncoated tubes.

The application of graphite might be said to have insulated the steel from deposit and thus rendered the tubes more easily cleaned; and when cleaned their interiors appeared perfectly smooth without the usual patches of scale remaining, as is the case after a tube has been bored with a turbine-cleaner. The one application of graphite so adhered to the metal that the interior of the tube had the appearance of a gun barrel, the graphite coat remaining intact after several cleanings. The graphite may be prepared for application to the interior of tubes by mixing it with pure mineral oil in an amount sufficient to form a thick paste, or it may be applied dry.

—*The Electrical Age*.

A TRYST.

I will not break the tryst, my dear,
That we have kept so long,
Though winter and its snows are here,
And I've no heart for song.

You went into the voiceless night;
Your path led far away.
Did you forget me, Heart's Delight,
As night forgets the day?

Sometimes I think that you would speak
If still you held me dear;
But space is vast, and I am weak—
Perchance I do not hear.

Surely, howe'er remote the star
Your wandering feet may tread,
When I shall pass the sundering bar
Our souls must still be wed.

—*Century*.

HANDY.

A young woman recently answered an advertisement for a handy girl, and the lady of the house seemed pleased with her. But before engaging her there were some questions to ask. "Suppose," said the lady, "now, only suppose, understand—that you were carrying a piece of steak from the kitchen, and by accident should let it slip from the plate to the floor, what would you do in such a case?"

The girl looked the lady square in the eyes for a moment before asking:

"Is it a private family, or are there boarders?"

"There are boarders," answered the lady.

"Pick it up and put it back on the plate," replied the girl. She was engaged.—*Sketchy Bits*.

RECOMMENDATIONS FOR THE USE OF GRAPHITE ON THE AUTOMOBILE.

The following excerpts from a little booklet entitled "Annual Automobile Repair Guide and Calendar of Events for 1907" are as follows:

"Ordinary kitchen soap makes an excellent substitute for grease and may be used plain or mixed with graphite. On chains it works admirably."

"In setting up a pipe-joint or 'union', it will often be found necessary to use something that will make the joint absolutely tight. White lead and shellac are both used for this purpose, and make a very good dope, but graphite and oil will be found more convenient if the pipe is to be taken down again."

We would wish to make some editorial comment on these quotations. Soap is a rather doubtful substitute for grease. Regular readers of GRAPHITE may recall an article on this subject that appeared not long ago in GRAPHITE, prepared by our lubricating department. In fact, the proper treatment of chains is recognized further on in the "Guide" and the following recommendation occurs:

"After being wiped dry, it (the chain) should be put in a pan of melted grease and graphite and allowed to stand there for half an hour, in order that the lubricant may work into the roller bearings. Drain the grease off, and after the chain has cooled, the surface grease should be wiped off. Oiling a chain on a machine does more harm than good, because it makes a sticky surface which holds grit, and slowly grinds away the chain and sprocket."

This treatment is of a piece with that advised by the Dixon Company. Dixon's Graphite Chain Compound contains the proper kinds and proportions of grease and graphite to properly lubricate the chain. This compound is melted and the chain dipped as described in the quotation previously given.

Concerning pipe joints, a compound for this purpose is also made by the Dixon Company, called Dixon's Graphite Pipe-Joint Compound, that fully meets the necessary requirements. This compound is also well used on spark plugs, tank caps, etc.

SIGNING CHECKS WITH A PENCIL.

"Who has a fountain pen?" asked the nervous man as he fished out his check book. "I have to pay my host his bill, and as I'm going out of town for a couple of weeks, I want to get the job off my hands. He hasn't a pen and ink here."

"Here is an indelible pencil," said a friend as he reached into his vest pocket.

"That won't do," snapped the nervous man. "No bank will take a check written with a pencil."

"Oh, yes, provided you wet the check first," said the friend soothingly. "If you can't get water, lick the check as you would a stamp and then do your writing while it is still moist. An indelible pencil is filled with nothing but ink powder, compressed into solidity. When it is moistened it becomes ink. Try it."

"I see," said the nervous man as he signed his check with a flourish, "that there are more ways of killing a cat than choking it with hot butter."—*Office Outfitter.*

Productions of the Dixon Crucible Co.

Dixon's Black-lead Crucibles and Retorts, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

Dixon's Brazing Crucibles, made in several shapes for dip-brazing.

Dixon's Graphite Boxes and Covers, for baking carbons and filaments for electric lighting.

Dixon's Fine Office and Drawing Pencils, unequalled for smooth, tough leads and uniformity of grading.

Dixon's Colored Crayons, in wood or solid. For schools, railroads, editors or factory.

Dixon's Lumber Leads, black or colors; for green or dry lumber.

Dixon's Metal Workers' Crayons.

Dixon's Felt Erasive Rubber, for erasing pencil marks, type-writer work or ink.

Dixon's Carburet of Iron Stove Polish, the old reliable; in cake.

Dixon's Pure Flake Lubricating Graphite, a solid lubricant for all frictional surfaces.

Dixon's Special Graphite No. 635, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

Dixon's Electrotyping Graphite, used by the majority of practical electrotypers of this country.

Dixon's Hatter's Lead, for coloring hat bodies.

Dixon's Plumbago for Shot Polishing.

Dixon's Plumbago for Powder Glazing.

Dixon's Plumbago Foundry Facings.

Dixon's Yacht Plumbago, for lubricating and smoothing bottoms of yachts.

Dixon's Graphite Waterproof Grease, for gears, wire ropes, hoisting chains and general machinery.

Dixon's Graphite Axle Grease, for trucks, wagons, carriages.

Dixon's Graphited Wood Grease, for use on trolley car gears which are enclosed in a gear case.

Dixon's Graphited Oil, for use in all places where the use of a gear grease is impracticable.

Dixon's Graphite Cup Greases, for use in cups or open bearings, on spindles, shafting, etc.

Dixon's Oiled Graphite,

Dixon's Lubricating Compound No. 688, for enclosed gears of electric automobiles.

Dixon's Silica-Graphite Paint, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

Dixon's Graphite Pipe-Joint Compound, for steam, gas and water piping, smearing gaskets and flanges.

Dixon's Automobile and Bicycle Lubricants.

Dixon's Graphitoleo, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

Dixon's Commutator Graphite, will glaze commutator with the finish so much desired by electrical engineers.

Dixon's Graphite for Type Setting Machines.

Dixon's Graphite for Talking Machines.

Dixon's Motor Chain Compound, for transmission chains.

Dixon's Crucible Clay and Graphite Mixture, for lining and repairing fire boxes.

Dixon's Stove Cement, for repairing stove or range lining.

Dixon's Traction Belt Dressing, for leather belts.

Dixon's Solid Belt Dressing, convenient for those who prefer a solid dressing.

Dixon's Graphite Resistance Rods, from one-eighth to one inch diameter; any resistance required.

Dixon's Graphite Brushes, for motors, dynamos and generators.

Dixon's Graphite Products for Electricians.

Special circulars with detailed information sent on request.

MUTATIONS OF TIME.

It was not so very many years ago that the earth was believed flat; we are told that in many parts of China the inhabitants still carry this hallucination.

Somewhat more recently, it was believed that the only oil suitable for lubricating purposes was animal oil and it took some little time to educate users to the advantages of mineral oils.

Coming down to still more recent times, we find some who have not yet been brought to see the advantages of flake graphite as a lubricant. The testimony on behalf of flake graphite is certainly abundant. Professors Thurston, Kingsbury, Goss and others have by actual tests proved scientifically its lubricating powers. In addition to this there has been the testimony of the practical engineer, "the man who keeps things going,"—yes, scores of them. Flake graphite is, like other truths, demonstrating its verity, and its value is further testified to by the various imitations that "just grewed," Topsy fashion. Among these are white graphite, amorphous graphite, graphited oil, and so forth and so on. In cylinder lubrication, flake graphite is found almost invaluable by many of the very best gas engineers for use on the engines in their charge. One oil manufacturer whose product is exploited for gas engine cylinder lubrication uses as his slogan, "the oil that graphitizes." We presume that he wishes to convey the idea that the deposit is of a soft graphitic nature rather than a hard carbon.

From the abstract fact that history repeats itself, and the concrete one that flake graphite is now used by many of the foremost engineers, we feel that we may prophesy that before long the use of flake graphite and oil will become as common and usual as the use of oil was alone not long since.

GRAPHITE FOR PIPE JOINTS.

Plumbago compositions, such as are used for lubricating the chain gear on bicycles, are much better than white or red lead for rendering the joints of underground air pipes tight. The graphite protects the threads from rust, consequently the threading on the pipe does not deteriorate rapidly and the pipe can easily be taken apart when it is desired to move it to some other part of the mine. Air-pipe should be hung from hooks, driven into the timbers, when the drift is timbered, or into plugs, drilled in the sides or roof when in untimbered ground. When the air pipes are laid directly on the ground, they deteriorate rapidly owing to coming into contact with acid water; besides a fall of ground is then more apt to break the pipe than if it is suspended. The hooks should be placed close together so that the strain of the weight will not cause the joints to leak. When suspended any leaks are readily perceived. A frequent inspection of the pipe line by the mine superintendent and comments by him on its condition will greatly aid in promoting alacrity among miners in detecting leaks.—*The Engineering and Mining Journal*.

PRACTICAL.

Mother (to daughter, whose admirer has just called)—"Now hurry up and go into the parlor—otherwise both your tea and your lover will cool off."—*Fliegende Blaetter*.

DIXON'S TICONDEROGA FLAKE GRAPHITE, VERY EXTENSIVELY USED IN THE UNITED STATES REVENUE CUTTER SERVICE.

The following letter comes to us from a first Assistant Engineer in the Revenue Cutter Service. Following our usual policy, we omit names but are reproducing the article verbatim.

Joseph Dixon Crucible Co.,

Jersey City, N. J.

Gentlemen:—I take pleasure in acknowledging receipt of the booklet, tenth edition of "Graphite as a Lubricant," and also a copy of Mr. Wakeman's "Feeding Graphite for Lubricating Purposes."

I use quite a lot of your graphite mixed with coal-oil or kerosene as a medium of getting it to the valves and cylinder surfaces. We also expect to install two...sight-feed cups. I know of other engineers who also use kerosene as a medium for handling graphite. I remain—"

In this connection, would say that should any one be further interested in tests pertaining to graphite as a lubricant using kerosene as a medium, we would be pleased to send a copy of our booklet "A Study in Graphite" with tests by Professor Goss, where kerosene was used as a carrier.

FROM "THE HERMITAGE."

I love thee, thou brown, homely, dear old Earth!
Teach me thy wisdom; let me learn the flowers,
And know the rocks and trees,
And touch the springs of all thy hidden powers.
Let the still gloom of thy rock-fastnesses
Fall deep upon my spirit, till the voice
Of brooks become familiar, and my heart rejoice
With joy of birds and winds, and all the hours,
Unmaddened by the babble of vain men,
Bring thy inmost converse to my ken.

—EDWARD ROWLAND SILL in *New York Times*.

UNSIMPLIFIED SPELLING.

The proprietor of a Chicago hotel tells of an eccentric guest who registered with him about the time of the simplified spelling flurry, and who undertook, in an ingenious way, to show his contempt for the opponents of the proposed reform.

When the newcomer spread his signature on the register, it was at once observed that the name was a most unusual one—"E. K. Phtholognyrrh."

"Beg your pardon, sir," said the clerk, "but how do you pronounce it?" "Turner," was the reply, and spelled in approved fashion, too."

"Will you kindly explain?"

"Simplest thing in the world," said Turner. "First, we have 'phth,' the sound of 't' in 'phthisis'; then, 'olo,' the sound of 'ur' in 'colonel'; thirdly, 'gn', representing the sound of 'n' in 'gnat'; and, finally, 'yrrh,' the equivalent of 'er' in 'myrrh'. If the combination doesn't spell "Turner," what does it spell?"—*Harper's Weekly*.

TOBACCO is described as a nauseating plant that is consumed by but two creatures, a large green worm, and man. The worm doesn't know better.



DIXON'S

The "STERLING" Mark of Pencil Quality

Webster's Dictionary quotes Camden as follows:—

"In the time of King Richard the First, monie coined in the east parts of Germanie began to be of especiall request in England for the puritie thereof, and was called Easterling monie, as all the inhabitants of those parts were called Easterlings, and shortly after some of that countrie, skillful in mint matters and allaies, were sent for into this realme to bring the coine to perfection, which since that time was called of them sterling, for Easterling."

"Sterling" is therefore seen to mean real worth of materials and skill in workmanship. And that is exactly what the crucible and the name "Dixon's" mean on pencils—real worth of materials and skill in workmanship.

It is a satisfaction to use a really good pencil, one that you know is made carefully, skillfully and honestly—that is "sterling." When you find the "sterling" mark of pencil quality on a pencil, you may know that there is no higher standard.

Write for Dixon's Pencil Guide.

Joseph Dixon Crucible Co.
Jersey City, N. J.

Graphite

VOL. X.

JUNE, 1908.

No. 6.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

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SOME INTERESTING POINTS ON GRAPHITE.

The *Scientific American*, speaking of a new steam packing, says that the modern practise of using steam at high pressures and temperatures has brought with it certain problems which did not confront the engineer of ten years ago with his low pressure plant. One of the problems is the question of suitable packing, a question which grows rapidly more serious as steam pressures are increased. The packing which seems to give the best satisfaction is the packing which contains graphite in its composition. At the same time the material must be tough and tenacious, and must be sufficiently flexible or plastic to conform itself to all irregularities, thus absolutely preventing leakage. The prevention of leakage is largely due to the lubricating nature of the

graphite, and to the fact that the minute flakes of graphite fill up all the irregularities of the joints or surfaces.

The so-called "graphite habit" is slowly but surely being acquired by all up-to-date engineers. There was a time when only the shrewdest and cleverest engineers made use of graphite, and it frequently happened that the engineer who made use of graphite kept its usefulness to himself. He knew he had a good thing, and he was of the opinion that the less he spoke about it the better it would be for him, the more he would, to use a common phrase, have something up his sleeve that the other fellow didn't know of.

The writer of this sometime ago met a wide-awake chauffeur in a large garage and on inquiry found that the chauffeur had various kinds of Dixon's Automobile Graphites on hand but locked up, which he used on the sly. He was practically the cracker-jack chauffeur of that garage, and said that he didn't propose to let any of the "dubs" know what he was using that they might get as good results as he did.

The day when Dixon's Flake Graphite will be universally and openly used does not seem as far off as it did sometime ago.

"What effect would graphite have if poured on a hot bearing?" J. B. J.

The graphite would lubricate the bearing, as it is not affected by heat.—*Electrical World*

RESULTS WITH IRON CRUCIBLES.

Referring to the experience of brass founders in the use of iron crucibles, instead of graphite, in melting aluminum, the *Brass World* says: "Iron crucibles have been used to some extent by the large aluminum founders not because they possess any particular advantages, but on account of their low cost. They have been used for melting large quantities of aluminum, and in instances where a large graphite crucible would not give the best results. Graphite crucibles larger than No. 300 are rarely used, and it is in cases where much larger melts are to be made than such a crucible would hold, that the iron crucible has been employed. It has been found, however, that the aluminum attacks the iron and not only becomes deteriorated itself, but injures the crucible. The crucible, too, frequently cracks. As far as we can ascertain, the experience with them has not been such as to warrant their extensive use."—*Iron Age*.

MISS LIBERTY AND HER SURROUNDINGS.

The statue of Liberty on Bedloe's Island, New York harbor, celebrated not long ago the 21st year of her existence there, although she was conceived by Edouard Laboulaye, a Frenchman, in the Summer of 1865. When erected she was the tallest structure in what is now the Greater New York, being 305 feet high including the base; now there are scores of skyscrapers much higher, the Singer tower being 652 feet to the top of the lantern. The statue itself weighs 440,000 pounds, consisting of a copper skin one-tenth of an inch thick, weighing 176,000 pounds, and a steel skeleton of 264,000; there is a thin lining between the two metals to prevent electrolysis. Miss Liberty has been struck by lightning many times, but never injured, as such experience had been calculated on and provided for; and the power of high winds had also been discounted in her construction, so that no damage has resulted. Bedloe's Island is now an army post, and the government is spending \$60,000 putting an elevator and extra electric lights in the statue, increasing the sea walls, leveling the ground, and filling up the moat which ran around old Fort Wood.—*Marine Journal*.

"WILLIE," said the boy's mother, who was preparing to go out, "you mustn't eat that cake in the pantry while I'm gone. It will make you sick."

Three hours later when she returned Willie said: "You didn't know what you were talking about, mamma. That cake didn't make me sick a bit."

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

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SOME KIND THOUGHTS FROM "MOTOR BOAT."

A recent issue of *Motor Boat* contains the following item, which expresses a very kindly tribute to the late Mr. John A. Walker, for many years Vice President of the Joseph Dixon Crucible Co. Incidentally appreciation is further extended to GRAPHITE:

"One of the printed things that comes to us each month, and of which we have said very little, is GRAPHITE, published by the Joseph Dixon Crucible Co., of Jersey City.

"We have read this paper for years, and formerly found much pleasure in the articles of the late John A. Walker, long a moving spirit in the Dixon Co. Through his writings thousands who never met Mr. Walker came to know him personally, could read his character, that of a broad gauged man of business, a man of sound thought, and above all, a mind in which the spirit of kindness predominated. Mr. Walker made "GRAPHITE" a hobby. It is a publication of spirit, one which unquestionably gives encouragement to

the Dixon salesmen and which is devoted to describing the useful properties of graphite as a lubricant. Since Mr. Walker's death the magazine has been kept up to the standard. It is more than a mere advertising sheet. For instance, the current number contains articles on pressure-reducing valves, on the use of graphite in the New York-Paris automobile race, and there is some space devoted to interesting information on the lubrication of gas engines. Besides this monthly publication, the Dixon Company has prepared a number of really useful booklets. Those which will be found of use by the motor boat owner are several in number, chief among them a thorough treatise on motor lubrication, which will be sent to any reader of *Motor Boat* upon request."

TWENTY-SEVEN YEARS OF DIXON CRUCIBLES.

One of the Dixon salesmen recently had occasion to call on Mr. Albert Freymark, Superintendent of the Diebold Safe & Lock Company's brass foundry, to whom Mr. Freymark said that Dixon Crucibles have been continuously used in this foundry for twenty-seven years and during the entire time there had never been a kick or a claim against them. The very best coke is used for fuel and the results have been remarkably uniform during the entire period.

DIXON STOCKHOLDERS' MEETING.

The annual meeting of the stockholders of the Joseph Dixon Crucible Company was held Monday, April 20th, 1908.

Edward F. C. Young, George T. Smith, George E. Long, Harry Dailey, William Murray, Edward L. Young and William H. Corbin were elected members of the board of directors.

The old-time officers, Edward F. C. Young, President; George T. Smith, Vice President; George E. Long, Treasurer; and Harry Dailey, Secretary, were unanimously re-elected.

THE SUPERINTENDENT of a large mill who happened to order a small trial lot of Dixon's No. 8815 Graphite Grease became so enthusiastic over the results that he wrote us as follows:—

"While I myself took the initiative, my paper maker, and, in fact, all of the men who had anything to do with the test of Dixon's No. 8815 Graphite Grease, are agreed that it is by far the very best thing that we have ever tried for the purpose, and this is the reason I am now placing an order with you for a larger supply of it."

This same gentleman has very kindly volunteered us the privilege to make use of his name as reference in case we find it desirable to do so.

Other superintendents of mills have spoken in a similar way concerning this product.

WHAT A "GOOD FELLOW" IS.

To be a really good fellow is a condition any right minded man might aspire to, but to be a "good fellow" in the sense in which that designation is too often used is to be a cross between an amiable fool and a negligent pretender.

—*Detroit News Tribune.*

Rather harsh language, esteemed contemporary, but it seems to hit the nail on the head. Such a fellow, usually, is good for nothing.—*New York Herald.*

PREVENTING CORROSION OF STEAM MACHINERY.

By W. H. WAKEMAN.

Chapter II.

Fig. 6 illustrates the valve gear of a modern Corliss engine fitted with two eccentrics, the object of which is to extend the limit of automatic cut-off to about $\frac{7}{8}$ stroke. After such an engine has been in service for several months or years the idea of allowing it to stand idle for an indefinite period is very disagreeable to an enthusiastic engineer, but it is sometimes necessary to do so. If it is to be shut down for a short

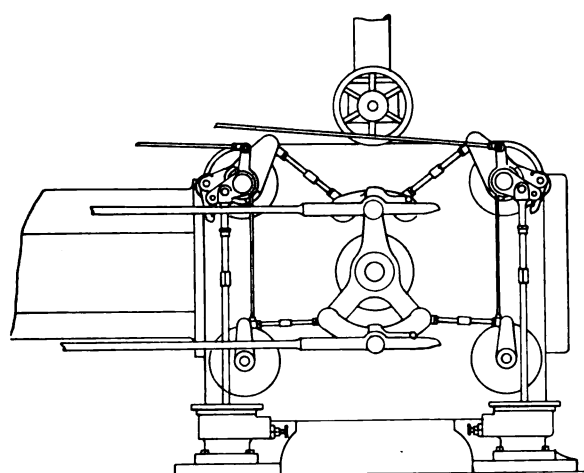


FIG 6

period (three months more or less), and the engineer wishes to retain the exact adjustment of the valves as he has proved it to be correct, it is not necessary to disconnect any of the parts. It will do no harm to let them remain in place, provided they are given a coat of Dixon's Graphite Waterproof Grease to protect them from rust.

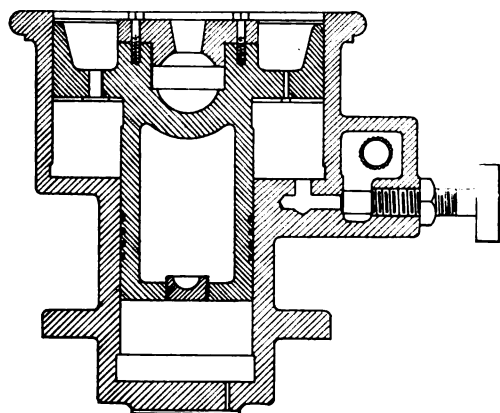


FIG 7

However, the dash pots should be taken apart, thoroughly examined for possible defects, coated with oiled graphite and put together again. Fig. 7 shows the design of these parts as made for many engines, and as they consist of two pistons of different sizes working in suitable cylinders, corrosion will soon render them unfit for use unless they are properly protected. All dash pots are not made exactly alike, but all need the same attention and care.

Fig. 8 is a high speed governor fitted with a heavy center-weight. As it must run fast to bring the balls into the plane for which they were designed, it controls the engine speed in

a satisfactory manner. If the oil holes are supplied with wooden plugs while the engine is shut down, they will be kept clean, and suitable grease will preserve all bright work from rust and corrosion.

Fig. 9 illustrates another kind of an engine which has peculiar features. Of course it is necessary to remove the packing from the piston rod stuffing box, and from all other places where it can cause corrosion in this engine as with others. The piston and cylinder need the care and attention described in the preceding chapter, but the valves are quite different from those found in Corliss engines. The fact that they need but little care should not cause them to be neglected altogether, as they ought to be taken out, cleaned and oiled. As they are usually not made of iron or steel, but of brass, or something else that will not corrode quickly, they need no special treatment.

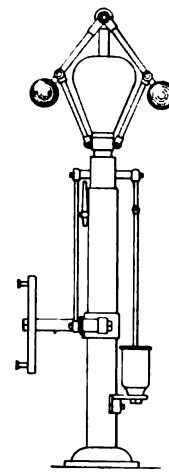


FIG 8.

There are places in some of the engines of this type where water stands after steam has been shut off, because proper provision for draining it out has not been made. This ought to be taken up with a sponge, or a piece of waste. This should be attended to before the valves are returned. Too much care cannot be exercised, however, in handling them, because the face of such a valve must be a perfect surface in order to be tight in service, and if this perfection is destroyed by accident or carelessness, it is difficult to restore it, especially with valves of this design, as examination of Fig. 10 shows that they are of the double beat puppet, or poppet type, hence the distance between the faces of these valves must exactly equal the distance from one seat to the other. If this is not secured in practise one part will be held above its seat, causing steam to leak through, resulting in waste of fuel unless all of the exhaust steam is used for heating purposes.

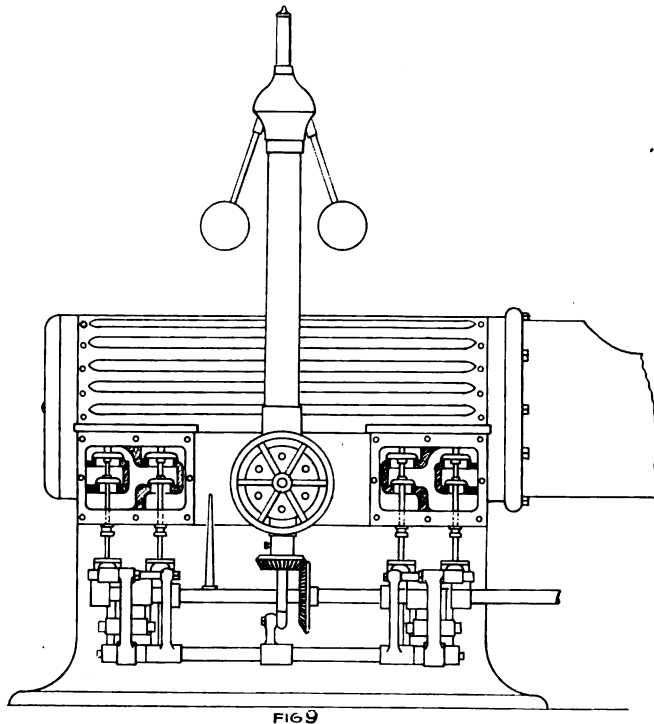
One of the engines in my plant is fitted with these valves, hence my attention has been called especially to them. After using them nearly fourteen years they are in perfect condition, and this desirable state of affairs is due to the selection of a superior grade of cylinder oil, to be used during the winter when the plant is operated through the day and evening, supplemented by intelligent although not burdensome care of the machine during two months every summer when the plant is shut down.

This cylinder oil was selected after experimenting with it, followed by long use of it in a plant that I formerly had charge of. During the fourteen years above mentioned no other kind of oil has been through the cylinder of this engine, hence the results secured so far as oil is concerned can safely be attributed to this kind. The fact that this plant must be "laid up" every summer, and put into service again every fall, has had something to do with the preparation of these chapters, both in theory and practise.

The valve gear and governor shown in Fig. 9 should be duly protected from corrosion as described in connection with Figs. 6 and 8.

Several years ago, while conversing with an engineer whose plant was shut down indefinitely because the business for which it was formerly used had been discontinued, I asked

for his opinion concerning the engine, to which he gave an unfavorable reply. Further inquiry concerning the cause of his dissatisfaction caused him to state that some parts of the valve gear were not strong enough for the work assigned to them. Inasmuch as I formerly had charge of that engine and had no fault to find with its operation, I did not fail to speak in favor of it and express surprise in finding that anybody else thought otherwise. Reluctantly he proceeded to give the reason for his unfavorable opinion by stating that while he had the valve gear disconnected in order to clean and re-adjust it, he dropped one or more of the cast iron pieces and they were broken. Now I suppose that all parts of an engine should have sufficient strength to stand such abuse, but the fact remains that at least some of them are strong



enough to last for many years in regular service, but if they should be allowed to fall several feet and perhaps strike on a cast iron cylinder foot, or a granite foundation stone, they might not survive the shock without breaking, and while it is desirable to have the parts made so that they will stand all kinds of abuse, the engine builder should not be blamed if they fail. The fact that all engineers do not handle the parts of an engine or pump as carefully as they might, is deplored, but it cannot be denied, hence no apology is required for warning all readers that care should be exercised while doing this work.

Sometimes when taking an engine apart a bolt, cap screw, or a nut cannot be easily removed because the action of steam has fastened them firmly in place. In all such cases a solid wrench should be used, provided one of the right size is at hand, as it is less liable to spring and round off corners of bolt heads and nuts than some other kinds. Even if a large assortment of these wrenches are on hand, there may not be one of exactly the right size. If a monkey wrench is used the largest one at hand ought to be taken because it will spring less in hard service than a smaller one. To use a Stillson wrench in such cases seems like harsh treatment, as the teeth leave their

imprint on the part to be loosened, but frequently the disfigurement will be less than where a monkey wrench is used, (especially if a small one is tried,) because the Stillson wrench will not round off the corners. The nut or bolt head can be made smooth again by filing after it has been removed.

If a screwed part of any kind will not move when reasonable force is applied to the handle of a wrench that is put on it, take a piece of steel say about three-quarters of an inch square and six or eight inches long, with ends made square and smooth, place one end of it squarely against the obstinate part and strike the other several smart blows with a machinist's hammer of suitable size. The concussion so produced is more effectual in starting a rusted or corroded joint than much greater force steadily applied will be, and if carefully done the smooth surface will not be badly disfigured. For the same reason it is a good idea when using a solid wrench to strike it with a copper hammer. This will not bruise the wrench and will probably start the nut or bolt at once.

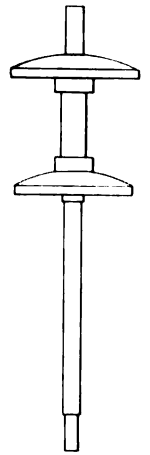


FIG 10.

The practise of making a few attempts and then leaving such a job unfinished because it did not prove to be as easy as expected, is strongly condemned as demoralizing and unsatisfactory in every respect. In order to protect such parts from rust and corrosion while the machinery is not in use, the following treatment is recommended. Take Dixon's Graphite Motor Chain Compound, put it in a pan and melt it over a fire. Immerse the small parts in it, then remove and put them in a suitable place to cool. This will leave them thoroughly coated with the compound (which is sold in bars), and after becoming cool it sticks to the metal, preventing air from reaching the coated surface, hence it cannot corrode.

Again referring to Fig. 9, an incident in connection with taking the governor apart, will be interesting. The spindle of this governor, connecting the upper part with the valve gear, passes down through the center of the standard shown. It is fitted with a good bearing at the top, and another just above the gears, but between them the spindle is only a rough piece of round iron, revolving in a space that is cored out in the casting and not machine finished. For several years sperm oil was used to lubricate the upper part of this governor, and much of it found its way down to the middle part of the spindle where heat from the steam pipe baked it on the rough iron, enlarging its diameter until it would not come up through the hole made for removing it, although it was a very loose fit when first put in place.

To remove this spindle proved to be a very tedious job, but after taking off the governor balls and their supporting arms, then disconnecting the lower part which shows between the gears, this spindle was moved up and down a great many times, and each time it struck against the upper support, thus removing a very small portion of the hard baked sediment, until it finally came entirely out. Ever since that experience mineral oil has been used on that spindle, and it has caused no further trouble.

The throttle valve is shown at the base of the standard, but the steam pipe was omitted because it would have covered

the main part of the governor. It is possible to turn this pipe downward if it is desired to take steam from below the floor.

(*To be Continued.*)

MY OWN WORK.

This is my work; my blessing, not my doom;
Let me do my work from day to day
In field or forest, at the desk or loom,
In roaring market-place or tranquil room;
Let me but find it in my heart to say,
When vagrant wishes beckon me astray,
"This is my work; my blessing, not my doom;
Of all who live, I am the only one by whom
The work can best be done in the right way."

Then shall I see it not too great, nor small,
To suit my spirit and to prove my powers;
Then shall I cheerful greet the laboring hours,
And cheerful turn, when the long shadows fall
At eventide, to play and love and rest,
Because I know for me my work is best.

—HENRY VAN DYKE.

SINGING AS A CURE FOR STUTTERING.

Forty years and more ago, when the writer of this paragraph was a youngster, he knew of an old sea captain who had among his seamen one who stammered. One day the stammering seaman came running aft to the captain, showing strong inclinations that he wanted to say something, but was unable to get it off from the stuttering tongue. The old captain yelled at him, "Sing it you fool, sing it," whereupon the sailor sang out in a tuneful way, "There is a man overboard, sir."

Now comes along Dr. E. W. Scripture of New York City, who announced in an address before the New York County Medical Society on December 23 last a cure for stuttering, which for simplicity and promptness in results seems to surpass any of those hitherto known.

In a series of lectures which he contemplates, Dr. Scripture will interest other doctors in the melody cure. It indeed seems to be true that there is nothing new under the sun.

TO SIMPLIFY THE CALENDAR.

To give every day a fixed relation to the week, the month, and the year by dividing each year into quarters of ninety-one days, or thirteen weeks each, as follows:

First quarter: January, 30 days; February, 30 days; March, 31 days. Second quarter: April, 30 days; May, 30 days; June, 31 days. Third quarter: July, 30 days; August, 30 days; September, 31 days. Fourth quarter: October, 30 days; November, 30 days; December, 31 days.

Thus would be assured the advantages of a perpetual calendar with the day of the week and the day of the month always the same, as, for example: The eleventh day of February would always be on a Tuesday. It will be seen, however, that Mr. Philip's calendar is a day and a quarter short in the year. How he would remedy this and how he arrived at the

above table he explains in his pamphlet. The first day of the year should, he says, "be regarded as a day apart, being regarded as I. 1906, I. 1907, &c." It should not be regarded as a day of the week, nor counted as belonging to any of the twelve months. For business purposes and public affairs New Year's day would not exist, and Mr. Philip expresses the opinion that, as the day is already almost universally, except in England, treated as a holiday, this first step in his plan of reform would cause no inconvenience.

Leap day, on its occurrence, would go into the same category as a day not counted. It would be known as "L. 1908," and so on, and would be interpolated between the end of June and the beginning of July, and observed as a quadrennial midsummer holiday. There would, then, be left 364 days, divisible into two halves of 182 days, and four quarters of 91 days each. The day following New Year's day would, of course, be January 1.

The symmetry of the scheme is completed by the taking of one day from July and one from October and adding them to February, thus giving that month thirty days. Every quarter would then consist of two months of thirty days and one month of thirty-one days. A perfect correspondence throughout the year is obtained by the further taking of a day each from May and August and adding them to June and September.

THE FOLLOWING letter is reproduced in a little booklet gotten out by the Graphoil Lubricator Company, makers of lubricators for feeding combinations of oil and graphite.

DE TOUR, MICH., Head of Lake Huron, Sept. 8, 1907.

Messrs. Comstock Engine Co.

GENTLEMEN:—Enclosed find check for Graphoil Lubricator as per bill rendered.

I had this one installed in new 10 H. P. gasoline engine, and have had it in daily use for three months. It is beyond comparison the best oil cup I have ever used or seen.

I use Dixon's Graphite with it and the oil and graphite combination is perfect. I shall use Graphoil Lubricators only in future, and recommend same to all my friends.

Yours very truly,

THOMP. BURTON.

Youngstown, Ohio.

FIXING A METER WITH A WELSBACH BURNER.

One of the young ladies in the Dixon Company wished to have the gas company make alterations with some gas pipes and in talking with them over the telephone, got slightly confused and informed them she wished they would send a man up to her house to fix a Welsbach burner to their gas meter.

We have heard of many ingenious methods for making the gas meter behave, but this is the first time that we have ever known of any one trying to provide light for the meter to properly perform its duty.

LIVING UP TO THE NAME.

She (on the Atlantic liner)—"Did you observe the great appetite of that stout man at dinner?"

He—"Yes; he must be what they call a stowaway."

—*Spare Moments.*

PERSISTS IN SELLING PENCILS.

Altina Martin, the little cripple who had so much trouble with the authorities here on account of her insisting that she had a right to sell pencils on the streets, has landed in Pensacola and without the slightest difficulty she secured permission to sell her pencils in that city.

The following from the *Pensacola Journal* tells of the arrival of the girl in that city:

"Some weeks ago the city authorities of Jacksonville drew upon themselves the hot fire of the entire state press because a hopelessly crippled girl who came down from the north was refused permission to earn her living by selling pencils on the streets of the city. The girl, who was a spunky little creature, insisted on doing so and was locked up in jail in consequence. She had all sorts of trouble and after her release went to Miami, but had to get out there, too.

"She got enough newspaper notoriety to satisfy an actress who had lost her diamonds, and if press sympathy had been convertible into cash she might have retired from business and lived on Easy street indefinitely. Yesterday she landed in Pensacola, and securing a permit without trouble from the mayor, she will sell pencils here for a few days.

"As her case has attracted so much attention in the papers a *Journal* reporter thought she was good for a brief news story and had a talk with her. She is apparently about twenty years old, has bright brown eyes and is rather pretty. She is a pitiful cripple, her lower limbs hopelessly twisted by typhoid fever when she was a child, and she has to get painfully around with the aid of a pair of crutches. She is an orphan without resources of any kind except from the sale of pencils and such charity as may be bestowed upon her. She has a strong sense of humor, looks at the bright side of things, and takes the 'short views' of life which save her from despondency.

"There are perhaps many such cases as bad as hers in various parts of the country, but she has the unique distinction of having been put in jail in a southern city for trying to sell pencils on the street, and she is entitled to the profit of that experience."—*Florida Times Union*.

FROM A USER OF DIXON PENCILS.

Sometime ago we purchased a new pencil sharpening machine for our office. It worked exceptionally well, and we were all highly pleased with it. The other day I found three of the boys trying to sharpen their blue lead pencils. The wood, of course trimmed off nicely, but the crayon invariably broke. I put my blue lead pencil in the machine, although I did not expect any better results, and much to my surprise, it sharpened perfectly.

I immediately set up a claim for superior skill. The boys who, as you can see, are not a very intelligent lot, claimed that it was my pencil. An investigation proved that mine was the only one of the four made by the Joseph Dixon Crucible Company.

I still claim that my personal ability was alone responsible, but the boys will have it that it was the pencil. I leave it to you.

(Signed) D. E. PARIS.

PRESBREY-TERIANS.

The world loves a laugh, and a smile lights up the dark spots. Where there are smiles all is likely to be well.

Substitution is like the nigger who "raises" his chickens—from some other man's roost.

The successful man is the discerning man who sees beyond the failures of today the opportunities of tomorrow.

To make even an ordinary success of life a man must keep a reasonably good control over himself, for it is the nerry men who hold the good positions in the commercial world, the nerry men who secure the biggest salaries in return for the labors that they perform.

To get rattled at the critical moment in any business emergency is fatal. The only salvation is in keeping absolute control over one's self, for the man who loses his nerve loses at the same time all that sense of proportion that is so important if one is to exercise good judgment.

—*Presbrey's Little Book*.

DIXON'S GRAPHITE GREASE AS A SALVE.

A young lady obtained some Dixon's Grease to try on her bicycle chain and not having a suitable box to put it in, used an empty salve box.

Her father who had a sore lip and her mother a sore shin, tried some of the "salve" and the next morning found that a wonderful cure had been affected.

We do not know whether the young lady has informed her parents that this was Dixon's Cycle Grease.

BELATED ECHOES.

The first evening that the new building was open for public inspection, an usher was showing a large party through the edifice. In some way a gentleman evidently slightly under the influence of the stuff that makes men vile, became attached to the party and was an interested listener to all the usher's explanations. In the course of their travels the usher and his party reached the safe-deposit department, where the guide explained the workings of the mechanism of the great door, closing his remarks with the statement that the clocks would run seventy-two hours without winding.

"Shay," gurgled the tipsy one, "how long'll they run if yuh wind 'em."—*The Eagle Eye*.

BICYCLES AND BURGLARS.

It seems to have taken police authorities a long time to discover that the rubber shod, swift and silent bicycle is an admirable vehicle with which to catch the pestiferous house-breaker. Birmingham, Ala., has just been undergoing an epidemic of burglarly, which appears to have been nicely checked when cycles were employed. Chief Bodeker has six wheelmen for each shift, who are protecting the residence sections during the afternoon and night. They cover their beats with so much ability that numerous burglars have already been caught and convicted, while the presence of the wheelmen is in itself a great protection. These officers work in pairs, reporting hourly by telephone. In this way they are in close touch with the reports that come in throughout the night.

"THE LOCOMOTIVE BUSTER."

How This Useful Person Breaks In New Engines.

Few people outside of the mechanical department of a railroad know anything of the oft-times vexatious peculiarities of a newly constructed locomotive.

According to the *Chattanooga Times*, it is necessary that a new locomotive should be "broke" before it is in condition to begin its mission in the world. Each new engine undergoes a set training or test before it is put into actual service.

Some locomotive manufacturing companies "break" their engines before sending them out, others ship them to the destination in a partial "knock-down state", and they are completed in the shops of the road to which they are delivered.

After everything is in shape and all adjustments made, it is turned over to a fireman who steams it up, and blows it off in order to remove any grease that might have accumulated in the boiler, or any foreign substance that might cause the boiler to "foam" while in service.

Then the engine is turned over to an engineer whose duty it is to "break" it in. The engine is steamed up again, and if it will run is taken for a little try-out about the yard.

The science of locomotive building has been developed to such a fine point that there is little danger now of an engine "bucking" on its first trial. The main feature of the test is to see that there is no heating of the journals or brasses. If there is no heating the engine is run about the yard for about half a day, and the steam is again blown from the boiler. The engine is then steamed up and taken for a long run on the main line. If during this test there are no capers cut the engine is sent out for its first trip with about 500 tons to draw. If it runs all right the tonnage is gradually increased to 950 tons. The tonnage depends greatly upon the size of the engine. The average engine of today will draw about 950 tons on a mountainous road, and from 1200 to 1500 tons over a level haul.

Heating is one of the principal diseases of an engine, and it is this feature that an engineer looks to more than anything else. Here is where flake graphite plays a most important part. No bearing can be mechanically finished so that it will not show under the magnifying glass many irregularities. It is the function of tough flake graphite to fill up these microscopical irregularities and form a graphite-to-graphite contact instead of a metal-to-metal contact.

Graphite is also made use of on all screw threads of bolts, and on all flanges, especially those exposed to heat or liable to rust. The graphite enables the fitter to make tighter connections, and connections which can be opened at any time with ease.

The front ends of locomotives are also protected from rust and corrosion by means of graphite, put on sometimes in the form of stove polish, and at other times mixed with linseed oil and made into the form of paint.

The engineer also endeavors to get flake lubricating graphite into the valves of his engines, as then he finds much less difficulty in opening and closing the throttle. The most dangerous proposition in breaking an engine is to get hold of one on which the throttle has been disconnected; there are but two ways out of this difficulty. The move is to apply the air brake, and in case it fails, to open all avenues of escape, and let the engine run dead.

Somewhere On Your Car

there is lost energy and excessive friction or wear unless you use flake graphite. Loss in compression, noisy chains or gears, squeaking springs or frequent trips to the repair shop indicate that lubrication needs improvement. In cylinders, bearings, gears, chains, and at all friction points

DIXON'S FINELY POWDERED FLAKE GRAPHITE

provides the necessary improvement. No matter what oil you use, Dixon's Flake Graphite will assist its action, making smaller quantities necessary, adding to its durability and efficiency.

Flake Graphite provides the "positive principle" in lubrication, impossible without it. It attaches itself to the metal surfaces, smoothing their microscopic roughness and providing a tough coating that lessens friction and prevents metal-to-metal contact; oil or grease alone cannot do this.

Write to our Lubricating Department, which at the present time is making a special study of proper motor lubrication, and can help you.

Joseph Dixon Crucible Company
JERSEY CITY, N. J.

THE AUTOBIOGRAPHY OF AN OYSTER.

I am born without jaws or teeth; but I've got fine muscles, liver and a heart. In each year of my life I produce 1,200,000 eggs; each of my children is 1/120th of an inch in length; so, 2,000,000 little ones can be crowded into a space of one cubic inch.

I am ready for the table in from one to five years after birth. You will never find me in cold parts of the world. I dislike cold. In Ceylon I sometimes grow to a foot in length. One of me there makes a stew, when I am half a foot broad. I am not of much account in England, unless I am imported there from America. It makes me very sad to think of fetching up in the Strand—I, who was discussed by Tiberius and Julius. I have been the cause of much bloodshed. Men fight fierce battles for me all along the American coast, the Italian, and the coasts of Kent and Essex.

If you eat me raw you are not at all likely to regret it, for I am in a raw state very nutritious and easily digested. As a fry I am inclined to be uninteresting and heavy. So few know how to fry me. I am about the only animate thing that can be eaten with impunity in a raw state. Parasites cannot exist in me as they can in chops and steaks and fruits. I am a pretty good friend to man, and to women. Look at the pearls I've given her. Thackeray has compared me in a raw state to a new baby. Yet I never kept him awake nights.

I'm not half bad in a stew; but as a roast in the shell all the poetry in me comes out. Then I sizzle with emotion, in butter, red pepper and a little sauce. The clam is like the driver of a hansom cab then—not in it with me. The clam! That commonplace fellow! I avoid him as much as possible. I am not a snob, nor yet a cad, but I really must not be expected to fraternize with the clam, nor can I discuss him. The line must be drawn. He's not in the Four Hundred. Well, I am.

—BLUE POINT.

THE USE OF THE LEAD PENCIL.

The lead pencil to be used for outlines in making a water-color drawing should not be very soft. It should vary in hardness according to the grain of the paper; a pencil that will hardly show on a fine grained paper making quite a black mark on a coarser one. If the pencil is too soft, much of it will be taken up by the first washes laid, which cannot help but be discolored by it. It is, therefore, best not to use the very soft grades, especially if light washes are to play a great part in the drawing. The old-fashioned cedar pencil, requiring the use of the penknife to sharpen it, is preferred by most. A bit of fine sand-paper or emery-paper, mounted on a bit of wood or cardboard, is necessary to bring the lead to a sharp point.

The pencil sketch should be made as light as possible, so that it may not be necessary to rub out false lines. In the distance and in the sky of a landscape especially it is better to allow false lines to stand than to rub them out, for the roughened paper will show even worse than they will. Still, it is sometimes necessary to make a line disappear, or, at any rate, to make it less evident. For this purpose one should never use the gritty vulcanized rubbers so much affected by some because of their apparent efficiency. Only the strongest Whatman papers will withstand their action, and these

not for long. Soft rubber, to be pressed, not rubbed on the paper, is a good deal better. It must be kept very clean, and it is best to trim off the soiled edge and corners every now and then with a sharp penknife or scissors. Bread crumb is more effective when it is neither too stale nor too fresh; in the former case it will crumble, in the latter it will smear. The best of all means of erasing is to take a piece of white glove leather—a soiled glove will not do—and cut it into small bits, which are to be thrown away as fast as used, and replaced by clean ones. They cannot be depended on to efface heavy lines, nor even light lines made with a very hard pencil, but as they do not roughen the surface of the paper, and the water-colorist should draw so lightly and correctly as not to be in need of stronger erasers, they are admirable for the purpose.

—*The Picture and Art Trade.*

Dixon's "Artist's" is well adapted to water-color sketching. The lead is perfected; smooth, fine, uniform. The wide range of degrees permits selections of a very soft or very hard pencil with all the intervening gradations.

For the erasing of false lines nothing is better than Dixon's Gem Eraser. Soft and pliable, it will not injure the drawing surface unless very excessively used.

THE MARCH number of *Power* has an interesting article on the "Care of Steam Boilers," which is well worth the reading of anyone interested in steam boilers. Among other things it recommends the use of graphite mixed with oil on screw threads "to assist in removing the next time."

As a matter of fact, Dixon's Graphite Pipe Joint Compound should be used on all plug threads and other screw threads, and on all flange joints.

The Dixon Company have for years used it on the header caps of the B. & W. boilers with marked success, and it is noticeable that when header caps are put on after being treated with Dixon's Pipe Joint Compound that there is not a single leak to be found when the boiler is again started.

SPEAKING OF HENS.

Quite a controversy is on in New Jersey as to the cost per hen for feed a year. Jersey farmers are all in the chicken business, but they disagree as to the cost.

Hiram Oldfield says he can feed his hens for 32 cents each a year, but then Hiram gets the greater part of his hen provender in the form of scraps from the hotels. The majority of those who raise their own chicken feed say the actual cost is between \$1.00 and \$1.25.

Sam Goodenough says that it costs from \$5 to \$15 apiece to feed his hens.

Bishop Baird says that taking it off and on, and nigh and far, at his Green River hennery and hatchery, not counting incubators nor brooders, or his own labor, or the eggs he gives away, he thinks Sam Goodenough's estimate is low, but it is worth a great deal to be known as a Jersey farmer.

"DON'T you know what it is? It's spring fever. That is what the name of it is, and when you've got it, you want—oh, you don't quite know what it is you do want, but it just fairly makes your heart ache, you want it so."

—*Mark Twain.*



DIXON AT THE NEW YORK PURE FOOD EXPOSITION.

Food expositions have a natural interest attaching to them—food is one of the necessary elements of life. The Pure Food Exhibit held at the Lenox Lyceum proved to be an unusually interesting affair and it is estimated that 40,000 people attended it during its three weeks' duration.

At first glance it may seem strange that the Dixon Company was represented since its product, graphite, while perfectly harmless, can hardly be classed as a food. However, it has a very intimate connection with the preparation of food, in that it supplies the basis for Dixon's Stove Polish; the preparation that keeps the stove looking bright and clean and at the same time serves to preserve it against rust and all forms of corrosion. The tidy housekeeper naturally has an interest in her kitchen, since a great portion of her time is spent here and probably the stove is the most important piece of furniture here. To keep it looking bright and shining with least labor on her part, she uses Dixon's Stove Polish, probably the new Dixon's Powdered Stove Polish, because of its greater convenience.

The booths of the various exhibitors were arranged in four circles which was probably the most attractive and economical arrangement that could be made. The one color scheme (a combination of white and yellow) was used throughout, which served to give harmony and unity to the whole exhibition.

The New York Retail Grocer's Union and Manager, L. J. Callanan, deserve great credit for the exposition which they so successfully brought about and conducted. Almost without exception, the exhibitors present had samples of their wares which were freely given to all those who might be interested in the products. Dixon, of course, was not found lagging in the rear, but had small boxes of their new product, the new Powdered Stove Polish, which were passed out to those who desired them, to the amount of 15000.

Not only the housekeeper, but the merchant was in evidence among the attendance. The dealer was there to see what the manufacturer had to offer and how the various displays interested the consumers.

Among the special features that appealed to the housewife, were lectures on cooking given by Mrs. Wallace. These talks were described as plain and earnest and were accompanied by explanation and demonstration.

Simultaneous with the New York Exhibition and distribution of samples at the Lyceum, a campaign was conducted in Jersey City and vicinity, the billboards being lavishly posted with lithograph bills and samples being distributed from house to house. Thus a concentrated attack was made upon the metropolitan district to inform all of the merits of the new Dixon Powdered Polish. The Dixon booth was in charge of John H. Baird, assisted by L. M. Chase and A. P. Whipple.



BOSTON AUTOMOBILE SHOW.

The following matter was received from our Boston Office too late for publication in our May issue:

The exhibit of the Joseph Dixon Crucible Company at the Sixth Annual Boston Automobile Show was a great success. This exhibit was in Spaces 437 and 438.

Through the courtesy of Mr. John S. Clarke, President of The Autocar Company, Ardmore, Pa., we were supplied with two gear cases. They were operated by electric motors and faced each of the broad aisles. They were used for demonstrating the excellent qualities of Dixon's No. 688.

This display attracted the attention of thousands of visitors and the Dixon representatives were kept busy explaining the advantages of the various Dixon Motor Lubricants.

The decorations of the exhibit were in olive green, in harmony with the green carpet and general decorations of the big hall, setting off to advantage the bright colored labels displayed on the various sized packages of the Dixon products. Literature was placed on the counters. An oak desk and chairs were within the booth and a gateway, always open, afforded easy access to those desiring particular attention.

The various jobbers represented at the Show who deal in automobile lubricants had a supply of the Dixon products in their displays.

It was pleasing to observe how the Dixon Automobile Lubricants have increased in popularity since a year ago, when a demonstration of these products was first made at a Boston Automobile Show. During the week large orders were received for the various automobile lubricants, including Motor Graphite, Motor Chain Compound, Pipe-Joint Compound and nearly half a ton of greases.

From left to right the Dixon represents are as follows: L. H. Snyder, C. A. Shaw, H. A. Nealley, J. A. Mott.

DIXON'S graphite publications sent free upon request.

WHAT INVENTION DOES.

Lately an express train in the Subway was running around the Times Square curve at a speed of 25 miles an hour when the coupling parted. When the two sections stopped, only a few feet intervened between the ends of the parted train.

The passengers in their fright and excitement had no thought of the marvelous mechanical ingenuity which meant for them life and safety. When the rubber tube which connects from one train to the other was broken, instantly the air released from an auxiliary tank at the bottom of each car was forced under pressure into the brake cylinders and set into operation the automatic brake system. This automatic brake system is a Westinghouse patent, and every Subway car is equipped with it.

Another thing that the passengers didn't think of in their fright was that as soon as the coupling became unfastened and the train stopped, a red light flashed in the rear, far back along the tracks, warning the next train that an obstruction was on the track ahead.

It is doubtful if even the employees on the train took time to think of the safeguards with which a wise engineering staff had equipped those eight cars just for such an emergency.

—*New York Times.*

ATLANTIC CITY, March 11, 1908.

Joseph Dixon Crucible Company,

Jersey City, N. J.

GENTLEMEN:—Dixon's Black has stuck to the Steel Pier Stack for three years, it is true, but it does not hold a patch to Dixon's Commutator Compound.

I have charge of two (2) 100 kw. 220 volt D. C. Seamon-Holske generators, and the commutators were very noisy. I tried everything that I knew or heard of without success, and the squeak appeared to stay. At the Street Railway Convention I met your Mr. L. H. Snyder, and he persuaded me to take a stick of compound and try it, which I did, at the same time telling him laughingly, "Here's to another fake, but I will give it a trial," which I did. The first night, it did not do much good; the second night the squeal got sick; the third night the squeal died and we have not been troubled since. If any one is troubled with the squeaks, use Dixon's Commutator Compound and they will be troubled no more.

A. H. FRANCK, Chief Engineer,
Atlantic City Steel Pier.

HOW WE LIVE.

Pierced by the Pin Trust,
Chilled by the Ice Trust,
Roasted by the Coal Trust,
Soaked by the Soap Trust,
Doped by the Drug Trust,
Wrapped by the Paper Trust,
Bullied by the Beef Trust,
Lighted by the Oil Trust,
Squeezed by the Corset Trust,
Soured by the Pickle Trust.

—*Birmingham Age-Herald.*

THE SERVICE.

ineering con-
lubricants for

creating of flake

also the reprinting of an

appeared previously in this publication by

C. Dinger, Lieutenant, U. S. N. We reproduce the full article of the first named writer, and a portion from the second:

ARTICLE BY L. H. SNYDER.

The conditions of marine engineering are, as we all know, different from those of stationary engineering. In marine work the first necessary consideration is that the working units must be confined in as small a place as possible. The units must be worked in varying stretches of 24 hours each. There are no emergency units that may be thrown in, in case anything goes wrong. The load is fairly constant, a steady, long, hard pull. There is no chance to shut down for repairs. Railroad men tell us that the life of the locomotive is very much prolonged if it can have an intermittent run, rather than a long, steady one. We may judge from this what a strain marine service puts on an engine.

Friction.—Wherever there is a mechanical movement, friction has to be overcome. This is done by interposing between the moving parts a substance which will separate the parts from each other (and has the least friction in itself.) There are three general classes of lubricants used—fluid, semi-fluid and solid. The writer will not attempt to discuss fluid or semi-fluid lubricants, because this is a subject which would cover many chapters, but will point out a few of the disadvantages of fluid lubricants for marine service, particularly in regard to steam engine cylinder lubrication.

Oil in steam engine cylinders, as many marine engineers have said, is a very "great curse," it being impossible to separate all the exhaust steam. As a consequence, some will find its way back into the boilers. The disadvantages of oils in a boiler are:

1. They have a tendency to attach themselves to the hottest places.
2. They are poor conductors of heat, and if there is any scale-forming material in the water it will collect.
3. If the oils contain impurities a chemical change will occur (especially in the presence of superheated steam), forming a destructive emulsion.

Solid Lubricants.—Anything which will reduce the amount of oil consumed, or entirely obviate its use in cylinder lubrication, is welcomed by the progressive steam engineer. A lubricant that has proved successful in this particular is flake graphite. The many qualifications of a perfect lubricant possessed by flake graphite especially adapt it for all lubrication, particularly in marine work.

It is unaffected by any degree of superheat or cold encountered in any class of lubrication. It will not gum, leave a sediment or injure the working surfaces. It is a good conductor of heat. It will stand the greatest load per square inch, with a marked reduction in friction. It does not offer the resistance to motion that is inseparable from the viscosity of an oil or grease that would stand like pressure.

If a metal, no matter now carefully polished, is examined

under a microscope, it will be found to contain many small irregularities—the real cause of friction.* It is the scraping of these irregularities, one over another—the constant cutting or wearing—which is so productive of hot boxes, cut valves and cylinders.

The thin, tough flakes of graphite attach themselves to and build up these irregularities, filling in the low spots and forming over all a thin, impregnable, veneer-like coating of marvelous smoothness. When a sudden lurch or pitch comes, this graphite coating will keep the metal surfaces from coming into contact with each other, and prevent the damage which might be done before the lubricator could deliver more oil.

Flake graphite may be introduced to the cylinders either with oil or by condensation of steam. It has no injurious effect in the boilers if some escapes the condenser and gets carried back. It will be a benefit rather than a detriment, as the flakes will become attached to the metal surfaces and prevent pitting, keeping foreign matter from taking hold. The heat transfer will not be affected, for graphite (as before stated) is a very good conductor of heat.

Semi-solid lubricants should be used wherever practicable, and have the following advantages over oils:

1. They are used only as needed, and form a protecting collar, after doing their work, which will keep dirt and grit from working into the bearings.
2. They are more cleanly than oils.
3. The fire risk is very much reduced.
4. They are cheaper than oils.

Care should be exercised, however, in selecting these, as they should be adapted for the work. Their lubricating value is always increased by adding flake graphite (it is always better to use graphite greases which are compounded by some reliable company, as they will be found to contain correct proportions of graphite for the work required of them.) Tests by the late Prof. Thurston, Prof. Kingsbury and Prof. Goss, all show that friction is reduced by adding flake graphite. These tests have more than been proved by engineers. A well-known commander in the United States Navy said:

"One of the first orders I gave on joining this ship was forbidding the use of oil in any of the steam cylinders, and to enforce this order I had all the oil cups removed from the steam pipes leading to the cylinders, so that it was impossible for the men to use oil. When these cylinders were examined, at intervals of from three to six months, I simply had them wiped out with a little waste and saturated with vaseline and graphite; and I must say that I have never seen the cylinders and piston rings in better condition than they were on this ship during my three years' tour of duty.

"I made a personal examination of the different cylinders whenever they were opened, and they were in perfect condition—never so much as a scratch—the walls being as smooth as mirrors. I can safely say that the use of graphite alone in steam cylinders gives excellent results, for if oil is used the oil goes through the exhaust into the condenser and into the boilers and forms an acid, which attacks the metal of the boilers and causes them to deteriorate very rapidly."

*It is related how a convict cut the bars of his cell window by using a piece of yarn and fine sand dust, the whole wetted by saliva—illustrating how much damage may be done to bearings by the lubricant being laden with metal particles.

ARTICLE BY H. C. DINGER.

"Flake graphite has the peculiar property of not being affected, either chemically or physically, by any temperature encountered in a cylinder. It is not easily carried away from the wearing surfaces, can stand any pressure, and requires only an infinitesimal clearance-space between surfaces. It has a high lubricating value and hardens and improves the wearing surfaces by filling up all the minute cavities and irregularities in the surfaces, giving, in a short time, a beautiful, hard-polished surface which requires relatively little lubricant.

"Graphite may be applied in the following manner: Whenever cylinders or valves are overhauled, mix graphite with vaseline or with cylinder oil before applying to the surfaces, which insures a general distribution. On starting up, introduce graphite through an oil cup or indicator pipe. This can be done in a dry state, using an oil syringe, or the graphite can be mixed with water and put in just like oil. Adding it to cylinder oil adds to the lubricating value, but if best results, viewed from the standpoint of boilers and condenser as well as engines, are to be obtained no oil should be introduced into any steam cylinder on board ship. While running, graphite can be added in the same way; but very little is needed, since it quickly distributes itself over the surfaces and, not like oil, it remains there. Whenever there are indications of the cylinder walls 'squealing,' a little graphite should be added. Some cylinders lubricated in this manner with graphite alone that have not had a drop of oil introduced for years except that which might have come from swabbing rods, on being opened are found perfectly smooth and as bright as mirrors.

"The same results are obtained with valves and their seats—the surface is made smooth and hard, scores are filled up, and a tight and easily-worked valve is the result. They develop a hard and smooth surface, so essential to steam-tight working.

"The small and often delicate secondary valves of steam-pump valve gear are made to fit quite tight, and often they become hot and dry, and, consequently, stick. If oil is used in these it gums on the surface, and this causes the valve to stick. Slight rusting also causes cutting, which interferes with proper running. The best treatment for these parts is: *First*, frequent overhauling, wiping off all parts with kerosene to clean, remove and prevent rust, and supplying graphite to protect and envelop the wearing surfaces. *Second*, adding a small amount of kerosene mixed with graphite, occasionally, or when a valve does not work properly. Kerosene serves to cut out and prevent rust; it also has no bad effect on the heating surface of the boiler.

"It is often stated that pumps will not run without oil, but it is a fact that pumps using oil do not run as well as other pumps in which nothing but a little kerosene and graphite has been used for a long period.

"The lubrication of the water cylinders of pumps is frequently entirely overlooked. Salt will deposit in some degree in pumps working on clean salt water, and is at once a cutting agent to plungers and cylinders.

"The abnormal wear of plunger-rods working in clean salt water has often been observed. Such pumps can be lubricated by placing a little grease mixed with graphite on top

of the glands. This at once cleans the lubricating material from the cylinder, thus reducing wear.

"These notes are the result of sea-going experience, and as such from a practical standpoint. There is no doubt but that the question of internal lubrication were well considered and investigated by those operating marine machinery, great reductions in overhauling, wear and tear, and anxieties in attendance would result."

The graphite used in the United States Navy, from which the conclusions of Lieutenant Dinger were derived, was Dixon's Pure Flake Graphite, of which large quantities are used by the Navy Department.

A NEW USE FOR DIXON'S FLAKE GRAPHITE.

A resourceful user of Dixon's Flake Graphite discovers a new and unique application for it. His letter, reproduced below, explains.

April 6, 1908.

Joseph Dixon Crucible Co.,

Jersey City, N. J.

GENTLEMEN:—I am a regular reader of GRAPHITE, your bright publication, and appreciate your kindness in retaining my name upon your mailing list for 1908. I am also a constant user of your flake graphite for lubricating purposes and for high speed machinery of any kind; a little works wonders. Have found it the only remedy for a brake band which persisted in getting hot and squeaking.

I have found a use for flake graphite which I think is a new one. I purchased a pair of shoes which were supposed to be of good quality. However, in a short time they developed a full grown squeak. Knowing Dixon's Graphite has never failed me, I pried apart the soles slightly and injected a small quantity of graphite. "It worked like magic."

Wishing you continued success, I am,

Yours very respectfully,

EXCESS OF JOY CAUSES DELAY.

The delay in getting out this number of the *School Review* is due to an excess of joy. The editor received a bunch of sample pencils from a certain worthy pencil manufacturer, selected one of them, sharpened it and began writing "copy." And the pencil was so nice and so gleefully glided over the paper, that the editor forgot all time, place and circumstance. He did not even think to stir up the fire, but sat up all night writing in the cold. Consequently he caught "la grippe," and was laid up in bed ten days. The pencil manufacturer explains, however, that there was by accident a little too much sulphite in the graphite of this particular bunch of pencils; in the next lot he will slightly increase the proportion of bromide, not in the least diminishing the joy, but only slowing one's enthusiasm occasionally and giving him cold feet, so as to remind him that the fire is out. Local dealers have been trying to get us to tell them what brand of pencils this is, but the samples were given us in strict confidence—and we should naturally feel a delicacy in revealing the manufacturer's identity.—*Louisiana School Review*.

Graphite

VOL. X.

JULY, 1908.

No. 7.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

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A CONSTRUCTING ENGINEER'S TRICK.

Some years ago we personally knew of a constructing engineer who always carried with him a can of Dixon's Graphite and after he had erected a new engine and started it, it was a matter of surprise to all onlookers how smoothly and well the new engine would run. This was due to the fact that the bearing part of the piston had been carefully and thoroughly rubbed with Dixon's Graphite, the walls of the cylinders had received the same treatment, and all bearing parts throughout the engine had received special care and treatment in the way of an application of graphite.

The constructing engineer did not do this any more openly than he possibly could help, but he did it and did it thoroughly, and the engines of his company were known for the smoothness with which they started off, and their smooth running, and the engineer didn't give Dixon any credit and didn't tell what his trick was.

Lately we have heard of another constructing engineer whose trick is to lightly coat all faces of parts that go together with Dixon's Graphite. This may not improve the job mechanically, but the parts *don't squeak*.

In built-up fly wheels the squeaking sound is often caused by slight movement in some of the joints. This may sometimes be removed by tightening up all joints, but even this may not overcome all trouble. There is, of course, absolutely no danger from the squeaking noise, but it is very annoying, and it is invariably the subject of comment by all who come near the engine. Here is where graphite comes in, and if a little oil and graphite can be introduced the squeaking is quickly stopped. The function of the oil is to carry the graphite to the bearing or rubbing parts, and therefore a light oil and not a heavy oil should be used. Even kerosene is often the best oil to use.

"I broke a record to-day. Had the last word with a woman."

"Didn't think it possible. How'd it happen?"

"Why, I said to a woman in the car, 'Madam, have my seat.'"—*Philadelphia Ledger*.

ARRESTED!

Such a heading savors somewhat of yellow journalism. The simple meaning of the word, however, is "stopped," and all corrosion and rust on iron or steel construction work have been stopped short when such work has been painted with Dixon's Silica-Graphite Protective Paint.

Silica and graphite are ideal pigments for a protective paint, and when the right kinds are used and properly ground in the best boiled linseed oil then the result is the best protective paint known to science or practise.

The Joseph Dixon Crucible Company stands as the founder and promoter of silica-graphite paint. At the present time there are a hundred or more imitators but no real competitor.

We have testimonials without number and cases without number to offer in evidence. To all who are interested in the subject of protective paint for iron or steel construction work we shall be glad to send circulars or representative.

Dixon's Silica-Graphite Protective Paint is recommended either as a priming coat or as a finishing coat. It is equally useful for iron, steel, tin, zinc or wood work. It is made in four colors only, dark green, dark red, black, and natural color of graphite, which is similar to a dark slate color.

DIGNITY OF TRADE.

By ELBERT HUBBARD.

Men must eat, they must be clothed, they must be housed. It is quite as necessary that you should eat good food as that you should read good books, listen to good music, hear good sermons, and look upon beautiful pictures.

That is sacred which serves. There are no menial tasks. "He that is greatest among you shall be your servant." The physical reacts on the spiritual and the spiritual on the physical, and, rightly understood, they are one and the same thing. We live in a world of spirit and our bodies are the physical manifestation of a spiritual thing.

We change men by changing their environment. Commerce changes environment and gives us a better society. To supply water, better sanitary appliances, better heating apparatus, better food served in a more dainty way—these are tasks worthy of the highest intelligence and devotion that can be brought to bear upon them.

We have ceased to separate the secular from the sacred. The way to help yourself is to help humanity. The way to cheat humanity is to cheat yourself. We benefit ourselves only as we benefit others.—*National Stationer*.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

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EASTERN ART TEACHERS.

The annual meeting of the Eastern Art Teachers was held at the American Museum of Natural History, New York City, in May.

There were about three hundred art teachers present; they came mainly from New England, New York State, Pennsylvania, and New Jersey.

Dr. James P. Haney, the Supervisor of Drawing in charge of New York City, gave an illustrated lecture on the "Method of Pencil Sketching from Nature." All his sketches were made on brown manila paper on a large blackboard and with Dixon's Lumber Crayons, using five grades of hardness and colors.

It was only with such crayons that the drawings could be made on a large enough scale to be seen across the large auditorium, and yet at any distance produce the pencil effect. The drawings were entirely successful and the lecture and the work were greatly appreciated by the teachers present.

A SERMON FROM "SYSTEM."

"Suppose that to-morrow some strong, brainy man were to sit in your chair, take your place and continue your work.

"Could he do anything that you are not doing?

"Could he better your work in any way?

"You know that a good man would make some improvements on the work you are doing.

"What are they?"—*System.*

Does that make any of us wince? Can we confidently say that if a strong man *were* to take our place to-morrow that he could do nothing to advance our work; to either improve its quality or increase its quantity?

It is a demonstrated fact that greater speed can be made by racers when they are paced. This fact is not without significance. Daily routine has a certain deadening effect, one is prone to relax even unconsciously. But we cannot always excuse ourselves by the plea of "unconsciousness." Have we not sometimes said, "Oh, that is good enough." This is weakness and its evils are many.

When we are lax, careless, or neglectful, we cheat our employer. We not only cheat him in the sense that we do not reimburse him with our best service in return for what he pays us, but we cheat doubly by occupying a place that a stronger man should have. But be assured that we cannot cheat our employer without cheating ourselves. This is not a copy book maxim, it is an inexorable law. Consider a minute.

To do less than our best tends to mental disintegration, just as lack of exercise tends to physical disintegration. It makes it harder to cope with the next problem or difficulty we may meet. To do less than our best means that our standard efficiency will never be advanced—always to do our best means increasing our capacity for still better work. And let the truism be here repeated that we never stand still, we either advance or recede. And it depends entirely upon ourselves. Further, like water, we inevitably find our own level.

St. Marys, W. Va., April 29th, 1908.

Joseph Dixon Crucible Company,

Jersey City.

MESSRS.:—Have used a quantity of your different preparations of graphite in my time, which is the kind I swear by, for it always helps me out of trouble.

I do not believe there is an engineer on earth that knows it all, but that each engineer knows one or more good things that others have never read of, or heard of; which is my reason for asking for *special* pamphlet on the uses of graphite.

Thanking you in advance,

Respectfully,

A. J. HOLLIDAY.

DIAMETER OF ANY WIRE OR CORD.

We are indebted to a daily paper for the following:

Should you ever find it necessary to obtain the diameter of a fine wire, it may be done in this manner: Wind it carefully around a Dixon pencil in one layer for an inch or so, that each turn is touching the previous one. Then measure exactly an inch along the wire and count the numbers of turn in the inch. You then have the information. Thus if there are eighteen turns the wire is one-eighteenth of an inch in diameter.

PREVENTING CORROSION OF STEAM MACHINERY.

By W. H. WAKEMAN.

Chapter III.

Fig. 11 is a plan of a high speed engine used to drive a dynamo by direct connection. These engines usually are fitted with drip pipes to carry off water from both steam chest and cylinder, which is not the case with the two kinds of engines already described. When an engineer shuts down a Corliss

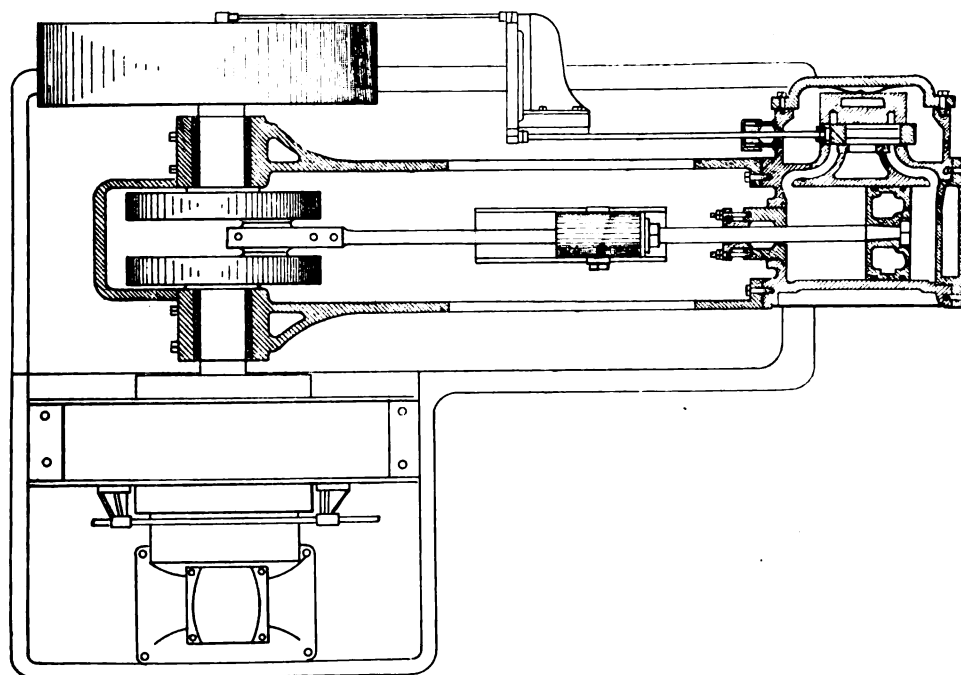


FIG. 11.

engine he does not have to take care of drip valves, hence when he shuts down one that is fitted with these pipes there is danger of forgetting them. Perhaps it seems unnecessary to mention this point, but I have seen an engine that was to be shut down for several months, left for a week with these valves shut, consequently the steam chest and cylinder were about one-half full of water when opened, and the parts in contact with this water were covered with rust. Prompt action in removing this rust prevented serious injury, but it caused the engineer much extra work, which he did not appreciate.

Do not fail to remove all fibrous packing from the piston rod and the valve rod, then give them a coat of graphite mixed with cylinder oil to last until more permanent treatment can be given. Before the piston rod is removed take a prick punch and put a mark on it, also one on the crosshead to correspond. If these marks are, say, five inches apart, and the rod is screwed into the crosshead when it is put back into place again until this distance is restored, it will certainly be back in its proper place, provided it was right before. Bring the rod back to its same relative position, then if the edge of the piston is chamfered to provide an easy passage for steam as it comes through the ports, this spot will be in its proper place.

After the piston has been removed examine the cylinder and ascertain if the packing rings travel to the counterbore

at both ends of the stroke. If they do not, a shoulder will be left, and it ought to be filed off smooth. The internal surface of this cylinder ought to be given a coat of cylinder oil mixed with Dixon's Special Graphite No. 635 as mentioned in connection with Fig. 1, or a coat of Graphite Grease will answer the same purpose.

Many of these high speed engines are fitted with a solid piston carrying two packing rings, as shown in Fig. 12. Such a piston is not adjustable, hence when it wears enough to lower the rod, thus bringing it below the center of the cylinder, it cannot be raised, and the only remedy is to turn it "up side down" in cases where this can be allowed. This will prolong its life a comparatively short time, but when it wears down again, a new piston must be put in. If for any reason it cannot be turned, it is necessary to procure a new one as soon as the old one is worn enough to lower the rod to an objectionable degree.

These packing rings ought to be taken out as illustrated, in order to clean and oil them. As they must be sprung out of the grooves, and as cast iron is not very elastic, there is danger of breaking them. It is not easy to give directions concerning the best way to do this, as each engineer must try it for himself, and if he breaks one it will prove a valuable but not a very costly lesson.

The grooves need attention as they form a receptacle for sediment from poor cylinder oil, and moisture also collects in them where only a small quantity of oil is used. Clean them and cover with good cylinder oil.

The valve of one kind of a high speed engine is shown in Fig. 13, and while others are of different design they are all alike so far as caring for them when the engines are shut down is concerned. Plain surfaces like this can be covered with

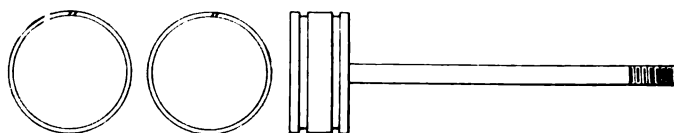


FIG. 12.

Dixon's Waterproof Graphite Grease, as it will keep moist air from coming in contact with the metal surface, hence corrosion will be effectually prevented for several months.

Valves in these engines are not like a plain slide valve in a throttling engine, as the latter is a comparatively rough part that may be planed off at pleasure whenever it is required, without spoiling it, therefore if such a valve is allowed to rust it may be repaired at small expense. The valve of a high-speed automatic engine must be balanced, as otherwise a shaft governor could not control it, because unbalanced pressure acting on the back of it would create too much friction,

and any form of governor cannot change the point of cut-off properly and give good regulation unless the whole mechanism is comparatively free from friction.

To overcome this objection the surface on which pressure could possibly act is reduced to the lowest practical point.

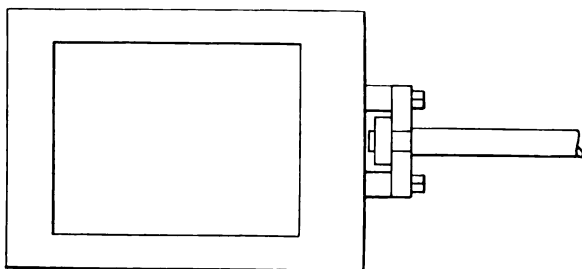


FIG. 13.

In addition to this a pressure plate is provided and as the valve moves between this and its seat it is protected from objectionable pressure. It is obvious that such a valve cannot be reduced in thickness, or shortened in length at pleasure, therefore when not in use it should be well protected from injury as above described.

In this case a stiff spring holds the plate in position, but if water accumulates in the cylinder until it becomes dangerous, pressure thus created is sufficient to overcome the spring and allow the valve to leave its seat, consequently the water goes directly into the exhaust port where it can do no harm. When such an engine is built the steam chest cover may have a ground joint, in which case the pressure plate is designed for use with no packing in the joint. If the ground joint is abused until it leaks, and packing is used, it should be as thin as possible. In some cases packing is used when the engine is built and it then is a good idea to retain the original packing as long as possible, because it is of proper thickness to give good results. For this reason it should be allowed to stick to the steam chest, but not to the cover.

This result may easily be accomplished by using the packing just as it is made for the former, but give it a coat of Dixon's Special Graphite No. 635 mixed with cylinder oil for the latter. Every time that the cover is removed this coat should be renewed in order to keep the gasket well protected. If it is broken on account of failure to do this, care should be taken to select another of the same thickness.

Fig. 14 illustrates the governor of a high speed engine which is used extensively in electric lighting service and for other work where a high rotative speed is desirable. There is a difference between high rotative and high piston speed which is not always recognized by working engineers. It is illustrated by the following example. A certain high speed engine is fitted with a cylinder 12 inches in diameter, the stroke is 12 inches, and the speed 300 revolutions, giving 600 feet piston speed per minute. Another engine has a cylinder 24 inches in diameter, the stroke is 48 inches and the speed 75 revolutions, giving 600 feet piston speed per minute.

The former has what may be called a high rotative speed for ordinary practical service, although it is often exceeded in special cases, also a high piston speed. The latter has the same piston speed, but the rotative speed is only one-quarter of the former. Where a small quantity of steam is taken in-

to a cylinder and quickly discharged there is not much chance for condensation, hence the net result is economy of fuel, after making due allowance for taking this small quantity many times per minute, but there is a limit beyond which other losses and disadvantages counterbalance the saving made. A long stroke slow speed engine is not economical because the steam has too much time to condense, therefore the best kind for factory use, driving shafting by means of belting, is a stroke about twice the diameter of the cylinder, and a rotative speed that will give not less than 600 feet per minute.

There are two kinds of shaft governors for engines, one of which operates the valve and controls the speed by lengthening and shortening its stroke as the load is heavy or light, while the other always gives the same stroke, but the relative position of the valve when compared with the crank is changed, thus giving a late valve closure for a heavy load, and shutting off steam early when the load is light. Fig. 14 illustrates the former.

The bright work on these governors should be protected by graphite grease, but it will not require much, as a larger part of them is only rough cast iron which has never been machine finished. Of course, they may have been given two or three coats of Dixon's Silica-Graphite Paint and then varnished to give a good surface for wiping with waste, in which case nothing further is necessary. Some of these governors are fitted with roller bearings to prevent friction in their operation. As the balls are enclosed, the receptacle which holds them may be filled with Dixon's Graphited Oil No. 682, as it will keep them in good order for a long time.

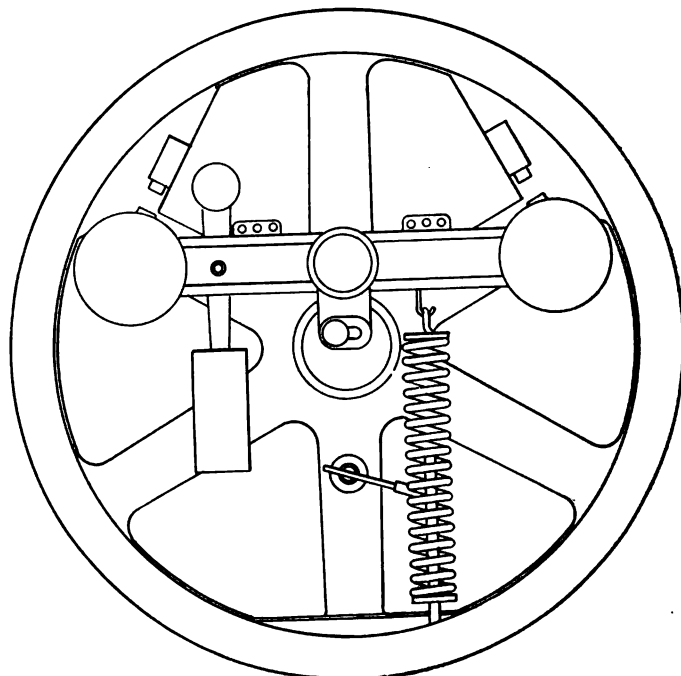


FIG. 14.

Fig. 15 is a generator on the crank shaft of a high speed engine. It is an expensive machine, therefore if it is to stand idle it ought to be well taken care of, but fortunately this is not a difficult matter. Where the plant is to be shut down for three months more or less it is only necessary to raise the brushes so that they will not come in contact with the commutator, and cover the whole machine with a rubber blanket,

well wrapped around it to exclude all dust and prevent water that may accidentally fall on it, from doing harm.

If the plant is to be shut down for a long time, remove the brushes, then draw a piece of enameled cloth around the entire armature (provided the air gap is wide enough to admit it), fasten it securely in place, and give the cloth a thick coat of Dixon's Silica-Graphite Paint.

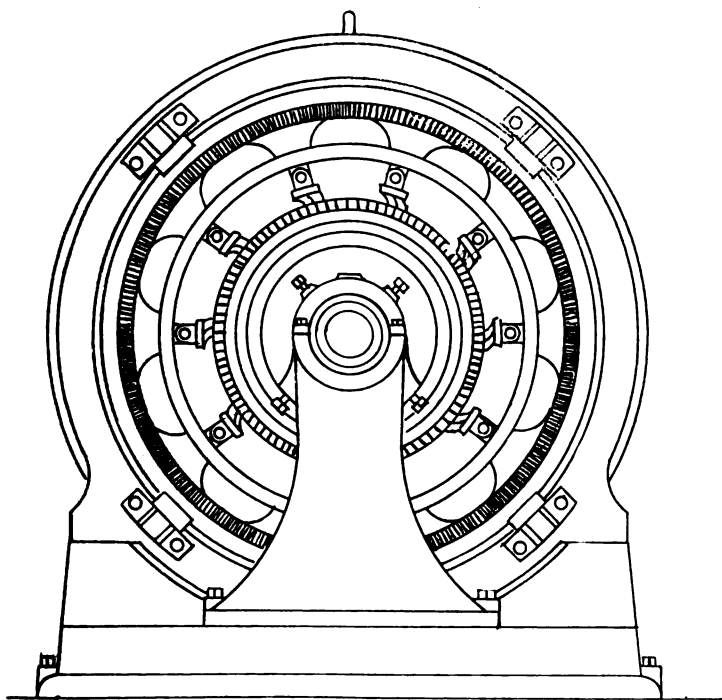


FIG. 15.

The enameled side of this cloth should be turned inward in order to give the paint a chance to soak into the cloth, and the enamel will prevent it from passing through and covering the armature wires. Put more of the cloth around the entire machine in the same way and give it a coat of the above mentioned paint. This will afford ample protection against dust and moisture.

In any or all of the above mentioned cases, if the machine is to be shut down for a long time, give the bright parts a coat of this paint and it will effectually prevent corrosion.

(To be Continued.)

COMMUTATION.

Commutator Brushes and the Use of Them.

Better commutation is what electricians and users of motor brushes are constantly aiming for. It would be interesting to have before one the many different steps that have been taken in the matter of brush making since the old-time strip of copper was used as a commutator brush.

There seems to be quite a general opinion among the inexperienced or little experienced that some one brush if properly made should answer all requirements no matter what the motor may be or what the voltage may be. This is a mistaken idea, and one that has produced a great deal of trouble.

At the present time the rivalry among brushes seems to be between carbon brushes and graphite brushes. Both have their uses in some cases, one is decidedly better than the other, and again it is *vice versa*.

In trolley car use the motors are usually equipped with carbon brushes, and they are found more satisfactory, so far as we can learn, than graphite brushes. A carbon brush has somewhat better conductivity, and where a motor starts under heavy load, acts better than a graphite brush.

On the other side, the graphite brush is a self-lubricating brush, it wears the copper less, and where the voltage is from 250 to 500, apparently gives far better satisfaction than any form of carbon brush.

Then again there are occasions where it is specially desirable to use both carbon and graphite brushes on the same motor, as they are found under certain conditions to do magnificent team work.

It seems to be the opinion of experts that it is necessary to make brushes to suit the type of motor and service conditions under which they are used. We frequently find that a type of brush which gives excellent service on one class of motors fails when applied to another class of motors.

According to one expert, "the essential features in brush specifications are to have sufficient resistance to limit 'cross currents', sufficient cutting to wear off mica, sufficient lubrication to polish the commutator surface, and be sufficiently hard to give long life without breaking."

Experience shows that the brush which keeps the commutator in the best condition will give the longest service.

The difficulty experienced sometimes with graphite brushes is that the mica, when it gets to be higher than the commutator, will tear and destroy the soft graphite brush, while had a carbon brush been used the hard carbon would have cut down the mica. At the same time, however, the carbon brush would also have cut and would have worn the copper of the commutator. In other words, it is quite conceivable that a brush that would dress the mica might also dress the copper to its detriment and early destruction.

In a previous number of GRAPHITE we have shown how the mica can be kept down by the use of a proper grooving file.

Incidentally we will say that Dixon's Graphite Commutator Brushes have given most excellent satisfaction, but before using them we should be glad to have you write us and advise us what type of motor you have and what the conditions are. We know that we can then suit you infinitely better than when we attempt to go it blindly.

It may be well to bear in mind that the use of commutator compounds, that is a compound for dressing a commutator, is gradually disappearing. Commutator compounds are sometimes apt to make short circuit. The present day practise is to use a brush that is self-lubricating, one which will give a smooth surface and produce minimum wear on the commutator, as well as one that will aid sparkless commutation.

NEW YORK'S POVERTY AND CHARITY.

One of the sad things in the life of a great city is shown in the statement in the daily papers that five hundred or more school children in the city of New York were actually starving and that pupils have fainted from hunger during classes.

Again, the quickness and generosity of a great city is shown by the action taken by the Association for the Improvement of the Condition of the Poor for the prompt relief of such children.

Master Mechanics and Master Car Builders Convention.

Descriptions and Photographic Illustrations of Convention Doings and Atlantic City.

M. M. & M. C. B. CONVENTION, ATLANTIC CITY.

Again it's the M. M. & M. C. B. Convention and again it's Atlantic City. The two seem to go together so well as to be almost inseparable, though we believe that it has not been definitely decided whether it will be Atlantic City or Saratoga next year. It would seem that Atlantic City could not be improved upon, certainly it does not compare unfavorably with Saratoga. As we write, the convention is in full swing.

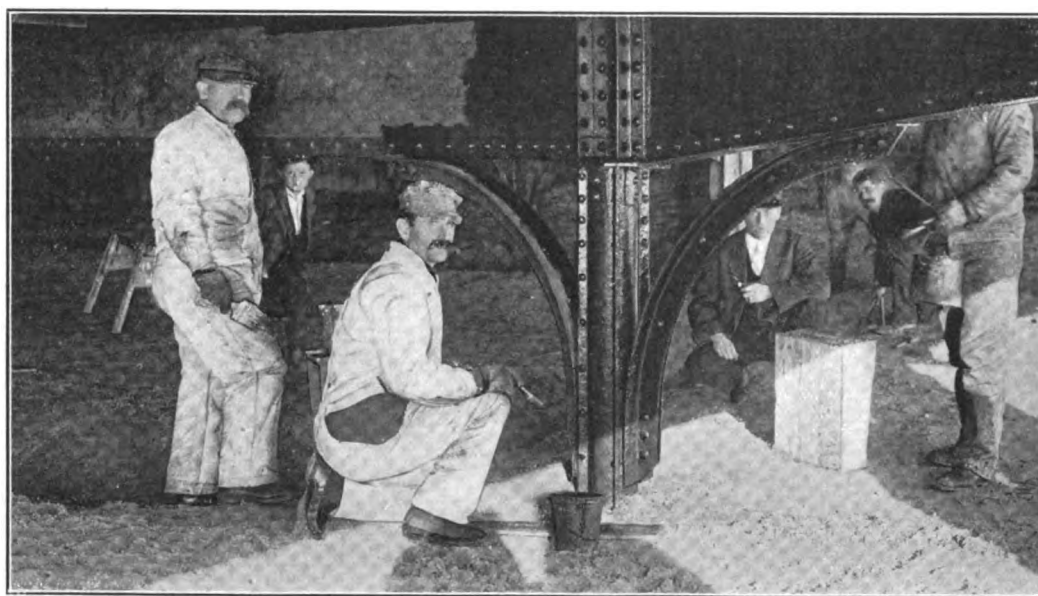
The convention hall (Greek Temple) and the supply men's exhibits were on Young's new Million Dollar Steel Pier. Various features were provided for the comfort and entertainment of those in attendance: bathing, golf, band concerts, vaudeville, informal dances and balls, etc., and as was done last year, rolling chairs were placed at the disposal of those wearing the convention badge. The booths of the various concerns exhibiting were very attractive as a whole. One could see pieces of the heavy machinery at work, and in the smaller booths, where demonstrations of this kind were impossible or impracticable, booths were made into little reception rooms and in most cases were tastefully decorated with flowers and ferns.

In the way of supply men, almost everybody who is anybody was there. Judging from the quantity and quality of the exhibits, the temporary lull in business has not affected their vigor.

Of course, Dixon was there, and, to borrow from the National Cash Register, "always in its place and ready for business." The distinctive steel booth, which is, by the way, painted for protection and decoration with Dixon's Silica-Graphite Paint, again housed the Dixon exhibit and received fully its share of attention. All the Dixon Products of interest to railroad men were to be seen: crucibles of various sizes, flake graphite and graphite greases for lubricating purposes, silica-graphite paint for the protection of steel, iron and wood, commutator brushes and resistance rods, and last, but not least, pencils.

Speaking of pencils brings us to the souvenirs given, among which were pencils. The particular pencil distributed is known as "Dixon's Mum" and it made something of a small sensation. Both ends of this pencil are sharpened and appear alike but while one end contains a writing lead the other end is made of rubber. No little amusement resulted from the different attempts to write with the rubber end. As soon as a Dixon visitor had seen the result of his trying to write with the sharpened rubber end, he would make off to secure some friend whom he would bring around and have him attempt to sign his name—in rubber.

The Dixon Booth was in charge of De Witt C. Smith and L. H. Snyder of Jersey City office, H. A. Nealley of the Boston Office, J. J. Tucker of the Philadelphia Office, and W. A. Houston of the Baltimore Office.

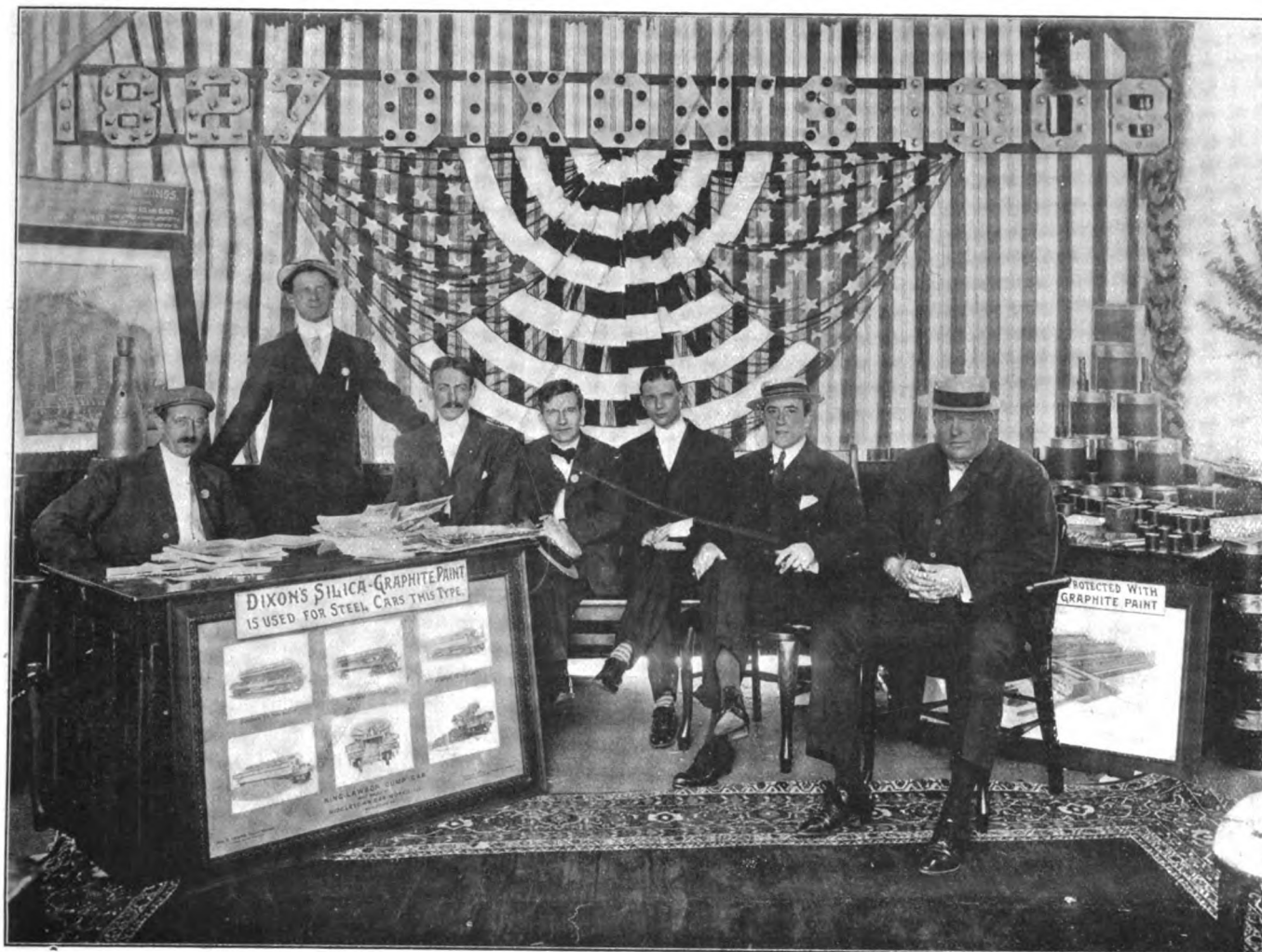


UNDERNEATH THE BOARDWALK.

The accompanying illustration shows the painting of the iron work supporting the Atlantic City Boardwalk.

Mr. Parsons, Superintendent of the Boardwalk, has advised us as follows:

"We are using Dixon's Silica-Graphite Paint for all this work. We have found no other paint that will so well resist the destructive conditions of salt air. It has been the standard protective paint in Atlantic City as long as I can remember."



THE DIXON BOOTH.

The accompanying illustration shows an interior view of the Dixon Booth. The portable steel building that has been previously identified with the Dixon exhibit was used, and proved as attractive as ever. On top of the booth was seen the large can representing the Dixon package in which is sold Ticonderoga Flake Graphite, the cure for, and preventive of, friction ills. The product first made by Joseph Dixon, graphite crucibles, is in evidence, some of the crucibles being used to contain ferns.

On each side of the entrance were displayed the attractive electric fountains procured from the New York Electric Fountain Company. About the booth and at one side were placed framed pictures showing steel cars, bridges, buildings, and other structures painted with Dixon's Silica-Graphite Paint.

At the rear of the booth was set an electric sign which read: "1827 Dixon's 1908." Just below this sign was draped the American Flag which, by the way, has a real significance in connection with Dixon, since the best Dixon pencils are branded "American Graphite" and their lubricating graphite comes from Ticonderoga, N. Y., a spot to be noted in American history.

The Dixon representatives shown in this interior view are, from left to right: W. A. Houston, De Witt C. Smith, Frank Krug, L. H. Snyder, H. S. Snyder, W. J. Rowan, and A. R. Lloyd.

Unfortunately, Mr. H. A. Nealley, of the Boston Office, and Mr. J. J. Tucker of the Philadelphia Office, two of the "men

behind the guns," were not present when this picture was taken.

"WHAT'S YOUR CITY"?

Many connected with the convention will probably remember this call given by a newsboy carrying under one arm a big bunch of newspapers, and prominently displaying some daily editions from a few of the biggest cities. As Jersey City is reputed to be off the map we thought we would be safe in asking for a Jersey City paper. However, we found that the boy had been misjudged and Jersey City maligned, for from the depths of his pack he produced a Jersey City Journal.

In passing, we would observe that judging by the price charged, the newspapers are considered several times more valuable in Atlantic City than in the cities where they are published.

A COMPLAINT AGAINST DIXON'S GRAPHITE.

One of the visitors at the Dixon Booth after signing a visitor's card said that his company has had nothing but trouble since first using Dixon's Flake Graphite.

We were naturally surprised, not to say chagrined, to hear this unusual complaint, but our visitor went on to say that the trouble has been in keeping a supply of Dixon's Flake Graphite on hand. The men find it so valuable and use it so universally that it is with difficulty that stock is maintained.

DIXON's graphite publications sent free upon request.



HUNDRED AND FIFTY TON STEEL FREIGHT CAR.

The above illustration shows the special steel car of the Bethlehem Steel Company. This car was evolved by the necessity for shipping castings and forgings in single pieces that could not be shipped in ordinary cars. We believe the greatest share of credit for this car belongs to Mr. W. F. Roberts, the Master Mechanic.

Locomotive Engineering gives the following description of the car:

"The car itself consists of a pair of plate girders 6 feet deep at the centre and tapering both ways, as shown above in the illustration. The girder is made with $\frac{1}{8}$ inch webs, and double plates top and bottom $\frac{3}{4}$ inch thick by 4 inches wide fastened by 6 x 4 x $\frac{3}{4}$ inch angles. These girders are spaced 7 feet 10 inch centres, and are united by strong cross bracing at each end, leaving a well in the centre of the car. The main girders are supported upon two smaller girders which rest upon the centres of two eight-wheel trucks at each end. The car is thus carried on thirty-two wheels, or sixteen axles, and it is equipped with air brakes. Two 8 inch king bolts hold the main bridge girder, as it may be called, to the two girders which rest upon the trucks.

"The car, over couplers, is 103 feet 10½ inches. The main girder is 66 feet 10 inches long. Each truck has a wheel base 12 feet 9 inches, and the arrangement of two separate trucks at each end permits the car to curve readily, though on short curves the body of the car must necessarily have considerable side movement away from the centre line of the track.

"The open well in the centre of the car is about 24 feet long, and the load is carried, as occasion requires, either on the top of the main girders or upon I-beams, which cross between the girders on the level of the lower flange, against which they are bolted by four bolts, two to each girder, passing up along the sides of the girders and through heavy steel caps on the top flange of each girder.

"This car has proved its value in that it has transported various very heavy pieces of machinery."

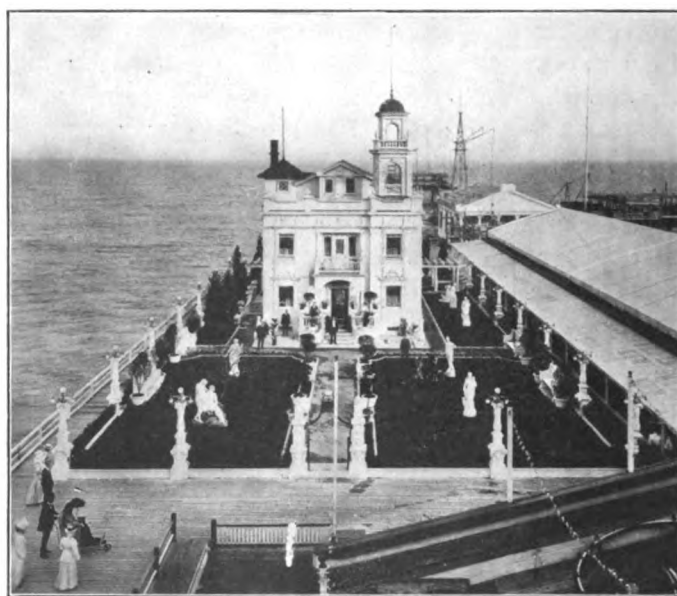
We are glad to be able to say that Dixon's Silica-Graphite Paint is used to properly protect this unusual car.

"IN THE SANDS OF TIME."

The illustration on page 976 can only do rough justice to the Dixon sand figures to be seen this year during the convention. The complete design included a locomotive, tender, and coal car; also Father Time with his scythe and enlarged hour glass.

The cut view here only includes a very small part of the entire design, and but little of the lettering can be seen. The reader sees the end of the "train", less than half of the coal car, and Father Time.

Lettered in the sand along the track gave the information that Dixon's Silica-Graphite Paint is used for painting steel cars. Underneath Father Time were the words: "Dixon's Flake Graphite has withstood the test of time and imitation."



CAPTAIN YOUNG'S NEW RESIDENCE.

The above cut reproduced from a photograph shows the notable residence of Captain Young, of Young's Steel Pier fame. At one side is seen the new pier itself, on the other side is the ocean.



PAINTING STEEL CARS.

The above illustration shows the type of car in use by the Sterling Coal Company. These operators, who have hundreds of cars of this class, have adopted Dixon's Silica-Graphite Paint as the surest means of protection against corrosion.

In this connection we would again reprint the report of the Master Car and Locomotive Painter's Association concerning the painting of steel cars which contained the following recommendations:

First:—All flash or mill scale, rust, oil, grease and dirt should be entirely removed from all parts entering into the construction of cars before any paint is applied. We believe that this can be best accomplished by the use of the sand-blast.

Second:—During construction, all overlapping joints, wherever metal is placed upon metal, should be thoroughly coated with a heavy mixture of moisture-repelling paint.

Third:—The initial painting, being of the greatest importance, should be done in the best possible manner. The first coat should be applied immediately after metal has been sand-blasted and before the cleaned surface can accumulate rust.

The material should be of an elastic nature and sufficient time should be allowed between coats for drying. It should be put on evenly in a workmanlike manner.

Fourth:—We believe that not less than three coats should be applied to all exterior parts of body, including underframing, and two coats on interior of body; also all parts of trucks except wheels and axles.

Fifth:—We recommend a rigid inspection of the cleaning and painting of cars under construction by competent, practical men, believing this in the line of economy.

Sixth:—We would suggest that the abuse of cars in service be stopped by discontinuing the loading of hot slag, billets, etc. Also that the hammering of side sheets and other injurious methods used to facilitate unloading be discouraged.

Seventh:—In the repainting of cars, all corrosion and loose

paint should be removed with steel scrapers and wire brushes or the sand blast, and not less than two coats of an elastic preservative coating applied to all cleaned parts.

As the greatest loss from corrosion is found on the interior parts of coal-carrying cars, we would consider the matter of painting those parts worthy of serious consideration.

We want to emphasize the recommendation that "not less than two coats of an elastic preservative coating" be applied. Dixon's Silica-Graphite Paint fully meets this requirement, it is an elastic coating. Its pigments being chemically inert, it dries by natural oxidation in a tough, durable film—the best paint it is possible to make, with the best record ever made.

GRAPHITE PIPE-JOINT COMPOUND ABOUT THE AUTO.

The *New England Automobile Journal* calls attention to the desirability of a liberal use of Graphite Pipe Joint Compound on the threads of the screws and bolts before insertion. If Dixon's Graphite Pipe Joint Compound is used one may be sure of a tight joint. If brass machine screws are used the application of graphite will prevent any corrosion; furthermore, all screws and threads may be easily removed where graphite is used. Every user of an automobile should carry Dixon's Pipe Joint Compound as well as Dixon's Motor Graphite.

THE WORLD IS A LOOKING-GLASS.

The world is a looking-glass,
Wherein ourselves are shown,
Kindness for kindness, cheer for cheer,
Coldness for gloom, repulse for fear—
To every soul its own.

We cannot change the world a whit,
Only ourselves who look in it.

—SUSAN COOLIDGE.



ENTRANCE TO YOUNG'S NEW MILLION DOLLAR STEEL PIER.

It was on this pier that the convention was held, it also housed the various exhibits.

DIXON'S No. 688 ON HOTCHKISS RACER.

Two days before the auto races which took place at Jamaica, L. I., on June 5th, our salesman interviewed Mr. Hermann Kilpatrick, the driver of Harry Levers' 120 horse-power Hotchkiss.

When asked about lubricants, Mr. Kilpatrick said: "I have always been a constant user of Dixon's lubricants, for I always find them uniform and dependable. This new fiber transmission grease that I hear so much about I would like to give a trial as the grease I am using now works out, being of a light consistency. How will your grease work in a ball-bearing transmission?"

When told that a mixture of equal portions of Dixon's Fiber Graphite Grease, No. 688, and Dixon's No. 677 made a perfect transmission grease, Mr. Kilpatrick said: "Fix up that mixture for me and fill the transmission of the Hotchkiss car with it." This was done and Mr. Kilpatrick gave it a complete test both in the practise runs and in the race itself. Mr. Kilpatrick drove the Hotchkiss car over the finish line first in six events, breaking the world's road record for a mile and setting up a new mark of $38\frac{3}{4}$ seconds. He finished first in a two mile event, time 1 minute, $19\frac{1}{2}$ seconds; first in the kilometer event, time $24\frac{3}{4}$ seconds; in the other three events Mr. Kilpatrick was disqualified, the car being of too high power.

"The fiber graphite grease is all that you say it is," is what Mr. Kilpatrick said after the race in giving his sanction. He found it to be a perfect lubricant as well as an excellent medium for quieting the noise of the gears.

DIXON'S graphite publications sent free upon request.

OVERHEARD AT ATLANTIC CITY.

"Just look around you," said a voice, "there's Young's new Million Dollar Pier, being one of the most valuable piers in the world. It is preserved with Dixon's Silica-Graphite Paint and out on the steel pier where blow the ocean winds that invigorate man but corrode steel, the shelter is painted with Dixon's Silica-Graphite Paint.

"The great black band that encircles the Absecon Lighthouse is Dixon's Paint.

"Why, the boardwalk you are walking on has its iron work protected by Dixon's Silica-Graphite Paint, and the poles that carry its myriad lights are kept from the rusting influence of the North Atlantic by this same sterling paint. Look up at the roof of Haddon Hall—good as new—that's Dixon's Paint.

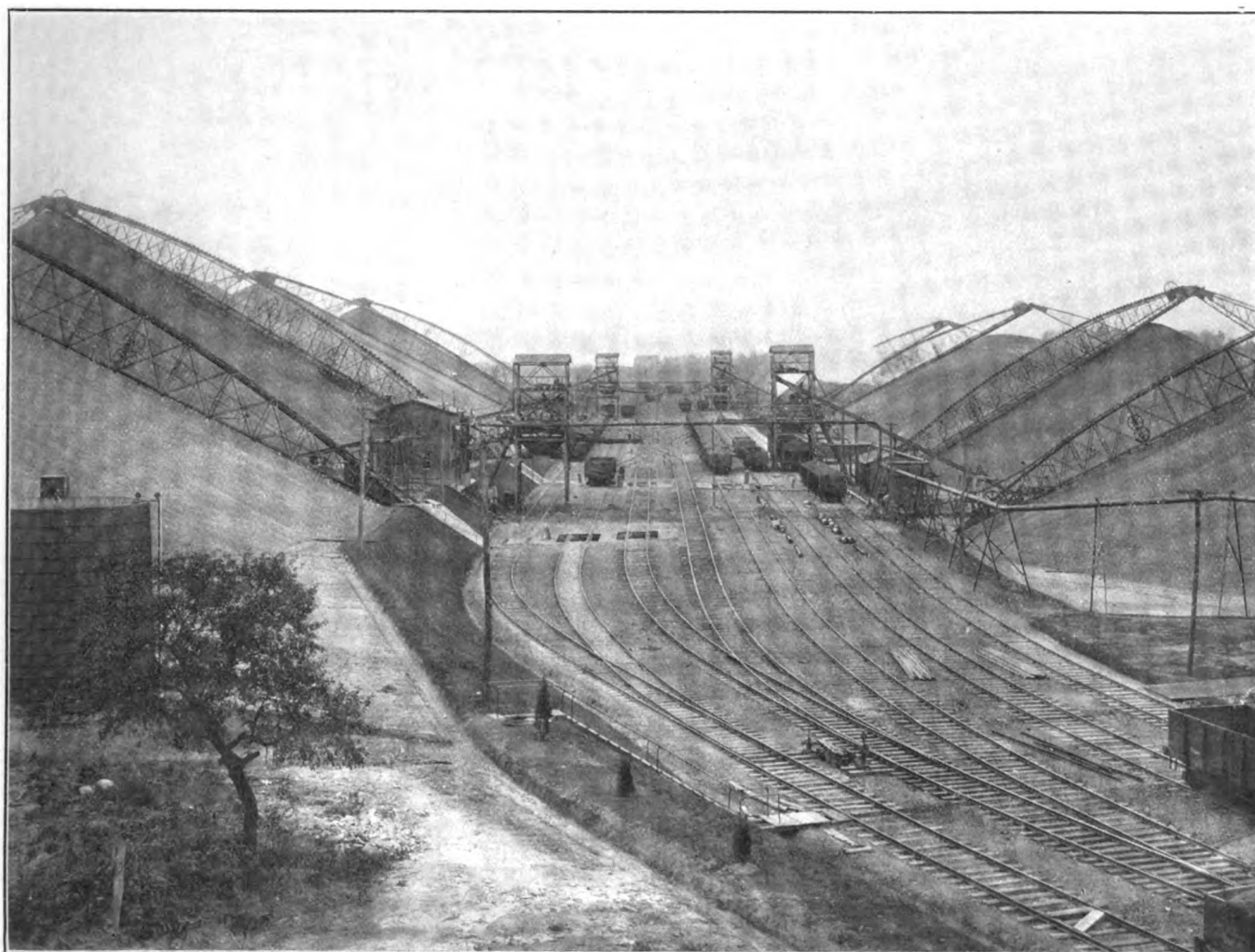
"And the dark red top of Galen Hall owes its freshness and preservation to Dixon's as does the roof of the Chelsea. Back of the Jackson a great smoke stack towers up toward the sky so 'darkly, deeply beautifully' that it appears as though varnished every morning. Not at all. Four years ago it was painted with Dixon's Silica-Graphite Paint.

"Yes sir, most discriminating and discerning is Atlantic City."

ANOTHER RICH STRIKE.

Fake Oil Capitalist (smilingly):—"How's your latest gold mine panning out?"

Fake Mine Promter:—"Beyond expectations. Why, old man, it's assaying over a thousand suckers to the ton of literature!"—*Puck*.



LARGEST COAL STORAGE PLANT IN THE WORLD.

Contractors, Dodge Coal Storage Co. and Link Belt Engineering Co., of Philadelphia, Pa.

After four years exposure, a careful examination shows no indication of the effects of time, and from the present condition it is reasonable to assume that repainting will be unnecessary for a number of years.

HOW WE WERE DESCRIBED.

If you enjoy a visit to Fairyland, visit the exhibit of the Joseph Dixon Crucible Company, Jersey City, N. J., situated close by the ocean and fully exposed to view. The well-known structural steel building, painted with Dixon's Silica-Graphite Paint, has been made most inviting and popular by giving it the appearance of a beautiful summer house. The green laurel, climbing the sides and overhanging the roof, is intertwined with electric bulbs, producing a pleasing effect, while beneath the star spangled roof, the rippling of fountains surrounded with plants of various kinds, tells the spectator of the enterprise, of the interest manifested by the Joseph Dixon Crucible Company, in making convention exhibits a success. Colored lights display the words "1827 DIXON'S 1908."

—From *Railroad Age Gazette*, Daily Edition.

WHETHER you attended the Atlantic City or Toronto Conventions, you can obtain literature concerning any of the Dixon products by writing us.

AIR BRAKE MEN'S CONVENTION AT ST. PAUL.

The convention was attended by Air Brake Men from all parts of the United States and Canada and many new members were present.

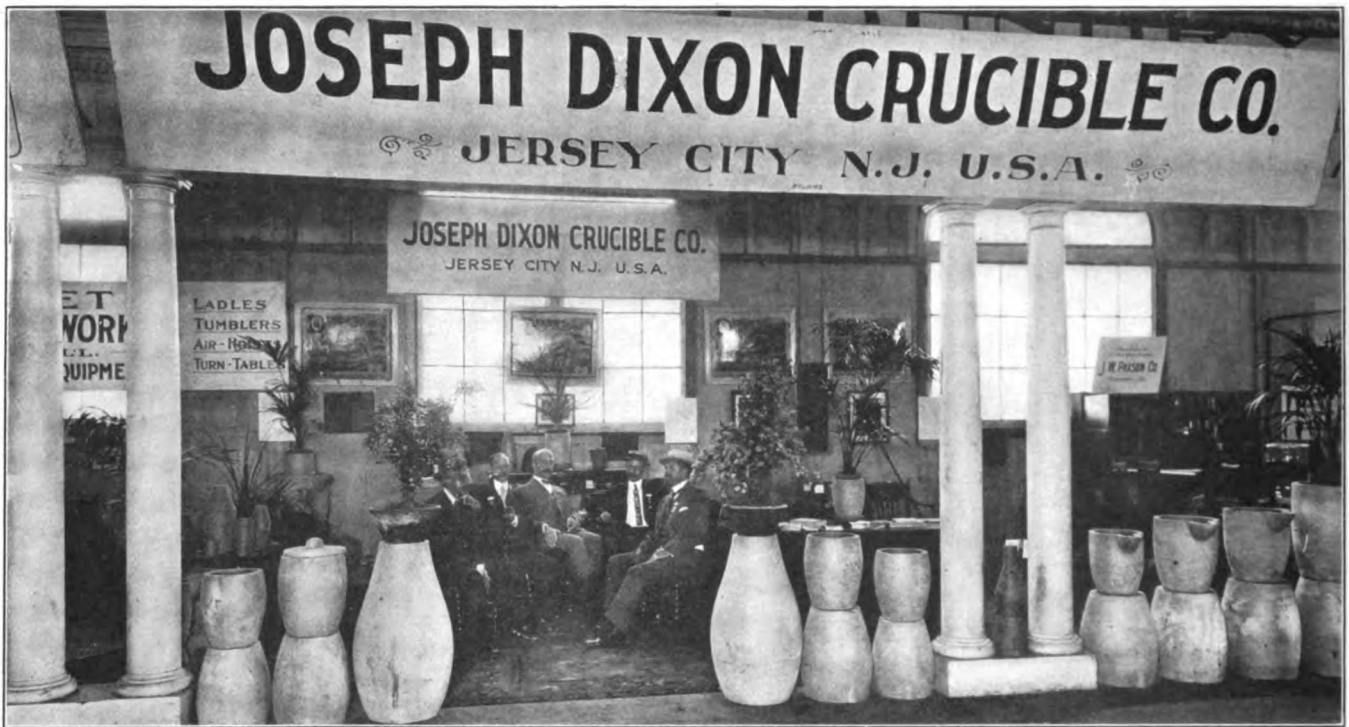
The social features were very pleasant and included trips to Minnehaha Falls, Lake Minnetauka and White Bear Lake.

The Joseph Dixon Crucible Company was represented by L. H. Snyder and B. B. Worley, and they report that Dixon's Graphite Air Brake and Triple Valve Grease continues to give most excellent satisfaction as a lubricant for the air brake system, and that it has now been officially adopted as the standard air brake lubricant by many of the leading trunk lines. Favorable comment was also heard concerning Dixon's Flake Graphite and Pipe-Joint Compound.

A CRUCIBLE LETTER.

We give below copy of letter we received from one of our customers, showing the excellent results obtained from a Dixon No. 30 Crucible. This letter came to us entirely unsolicited and, therefore, pleased us very much.

"Our object in writing you is to give you a report of a Dixon No. 30 Crucible, which has been used in our brass foundry in a crucible furnace from which castings are made for brass valves, fittings, etc. We secured from this crucible sixty-four melts of steam metal and six melts of aluminum. We consider this an exceptionally good report, and thought that perhaps it would interest you to receive this."

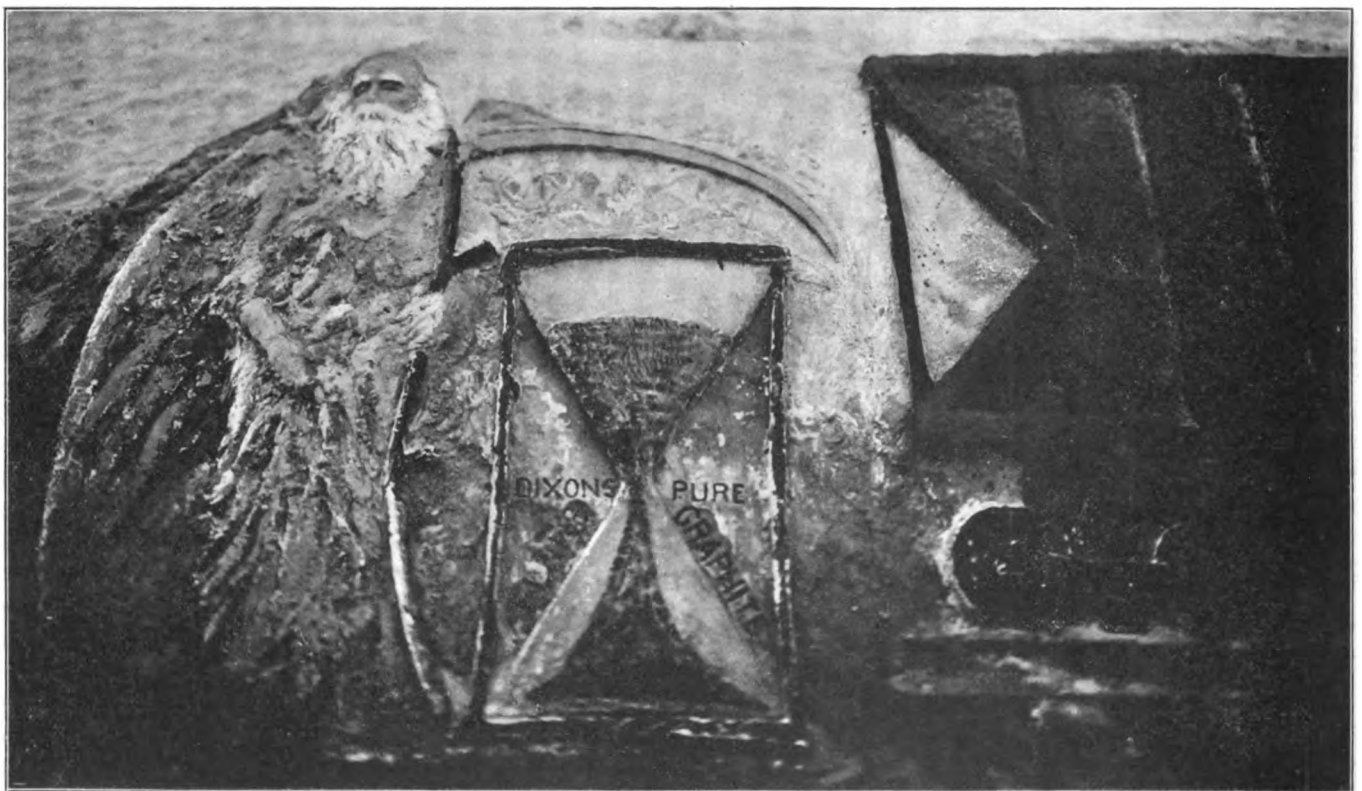


**DIXON BOOTH AT AMERICAN FOUNDRYMEN'S
CONVENTION, TORONTO, JUNE 9 TO 12.**

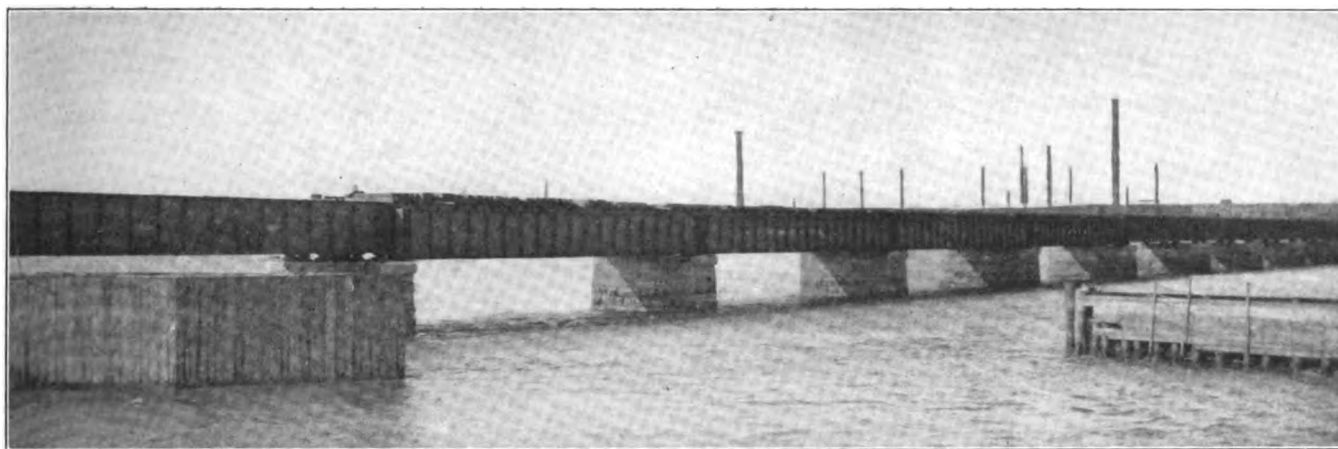
The above photographic reproduction gives a glimpse of the booth occupied by Dixon at the recent foundrymen's convention. The group shows Mr. Geo. T. Smith, Vice President, in the center. At the extreme left, and partly hidden by floral decorations, is Mr. Dudley Johnson of the Chicago Office; next to him is Mr. Hassis. On the other side of Mr. Smith comes first Mr. W. J. Coane of the Philadelphia Office, and Mr. J. A. Condit. The *Canadian Engineer* gives the following brief description of the exhibit:

The Joseph Dixon Crucible Company, of Jersey City, N. J., had an exhibit, a study of which must have been of great value to workers in crucible steel. Not only did they attempt to give object lessons in what happens to crucibles, but their representatives were always ready with suggestions and directions how to handle the crucible so that they would stand the greatest use. They explained the effect of rapid heating and moisture, they described the best tongs and how to use them.

A special circular on the handling of crucibles was distributed.



SAND FIGURES AT ATLANTIC CITY.



RARITAN RIVER BRIDGE; NEW DECK GIRDERS.

Painted with Dixon's Silica-Graphite Paint.

Through the courtesy of the *Railroad Gazette*, we are enabled to show herewith the main part of the new bridge over the Raritan River between Perth Amboy, N. J., and South Amboy, the iron girders of which are painted with Dixon's Silica-Graphite Paint for protection against the salt air and the corrosive action of the atmosphere.

This bridge was put in operation on April 21, and the New York and Long Branch Railroad was relieved of an obstruction which has been the source of troublesome delays in operation especially during the months when seashore travel has been at the highest.

The road is operated jointly by the Central Railroad of New Jersey and the Pennsylvania, and is on the direct line between New York and the numerous seaside resorts of the Eastern coast of New Jersey,—Long Branch, Asbury Park, Atlantic City and others.

Heretofore the Raritan river was crossed by a bridge near to the site selected for the one now in operation, but its capacity has been seriously hampered by the fact that although the line is double-track the draw was of the gauntlet type.

Occupancy by the two roads has made this feature even more objectionable than it would have been under other circumstances.

Actual work upon the new bridge was begun two years ago, and the decision to paint the iron work with Dixon's Silica-Graphite Paint was arrived at after carefully looking into the merits of the various protective paints.

CHARGING COSTS IN SHOP PRACTISE.

By L. H. SNYDER, M. E.

Considerable attention has been given to the subject of shop methods, especially to the question of cost. While I know that it is absolutely vital to ascertain the cost of production, it sometimes costs a good deal to secure this information.

Men do not always put down on their cards just exactly how they spend all of their time—some of them would be apt to lose their jobs if they were overaccurate in this particular. When a man makes out his card, he naturally desires to have it look as good as possible and sometimes arranges the items in such a manner as to somewhat conflict with the actual facts. In other words, if a man puts more time on a little job than would look well in black and white, he is not apt to publish

the fact. Some systems require so much attention themselves that quite a few minutes are put in by the man making out his card. Then there are some items rather difficult to classify, such as the waiting for parts, the securing of the right kind of tools, requisitions for stock and filling the same, etc. Then again there are times when work is somewhat slack but hardly slow enough to justify the laying-off of men and in this instance the man merely "keeps busy." Did anyone ever see an item on a time sheet which called for the amount of time the man was simply "keeping busy?"

I know of a case where a young apprentice, finding he had nothing to do, went to the foreman and told him he was out of a job. It was one of those afternoons when the thermometer was hanging around 90° in the shade, work was scarce and there was a big pile of scrap iron outside and he was set to work carrying it to a remote corner, simply to keep him busy. It wasn't long before the mechanics knew about this and made life miserable for the boy by "kidding" him and advising him how to take bigger loads, etc. Now, the boy was ambitious but he was always careful after this experience to be sure there was regular work in sight before he sought out his foreman. The foreman knows, as a rule, what the men are doing and knows that it is not always possible for them to keep busy on a certain piece of work. Quite often they are delayed, and when they are out of work he usually knows it, and if there is another job he puts them on.

I recall a place where there was a jack shaft with open bearings that had periodical spells of running hot, especially when a big test was being run and to shut down was out of the question. It was the practise to put a man with a bucket of grease on the job and he was kept pretty busy attending to the bearing. As the run on these big tests was usually of forty-eight hours duration, it meant big overtime for the grease man.

There was one bearing in particular that would get so hot that the babbitt would start running. A new mechanic, noticing this, got a can of Dixon's Flake Graphite, mixed the graphite to a stiff paste with kerosene and applied the mixture to the bearings. After this the fellow with the grease bucket lost his job.

I have often wondered what this fellow charged his time to while handling the grease bucket and would have liked to have seen his time card. It was probably charged to the machine that was going through the shop.

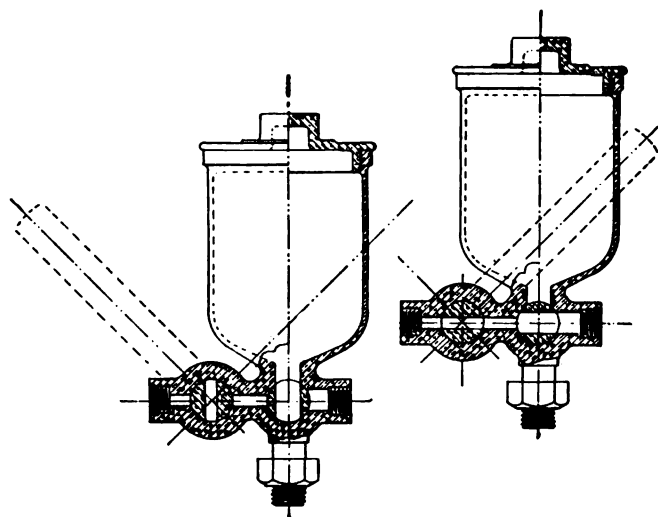
DIXON'S graphite publications sent free upon request.

CAMPBELL GRAPHITE LUBRICATING SYSTEM FOR LOCOMOTIVE SERVICE.

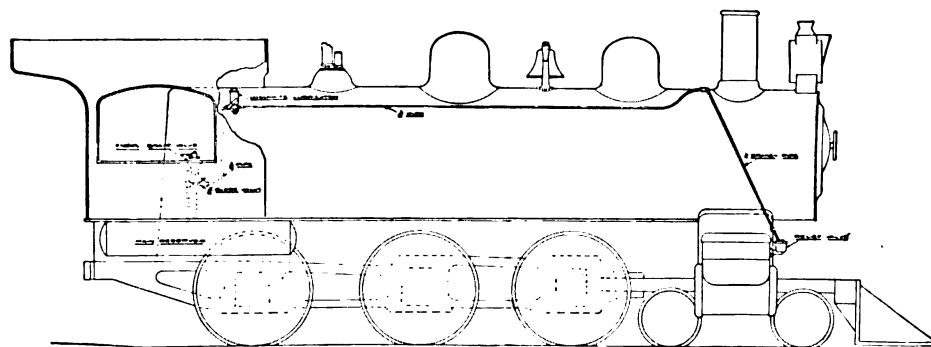
The following matter is published by Adreon and Company of St. Louis, Mo., the firm name and address over which the Campbell lubricator is marketed. We would state in this connection that the patentee of this lubricator recommends the use of Dixon's Flake Graphite, which has been found to work excellently in this system.

Adreon and Company solicit correspondence from those interested.

The value of graphite for auxiliary lubrication of locomotives is too well known to need explanation. A satisfactory means for depositing graphite into the valves and cylinders has been lacking and is now provided by the Campbell system of in-



jecting dry graphite by means of air, which is the only positive method, as it has been demonstrated that it can not be distributed when mixed with oil. A small amount will give instant relief to a badly working engine as reports on file show that with the use of the Campbell Graphite Lubricating System the most troublesome engines have been quickly restored to full working capacity due to the graphite smoothing over the frictional surfaces of valves, cylinders and pistons. Many



of the three hundred engines which are now equipped would have been sent to the shop for cylinder or valve repairs but for the relief given them by the graphite.

A cup holding about one pound of graphite is placed in the locomotive cab, convenient to the engineer, and is connected up by means of a $\frac{3}{8}$ " pipe with main reservoir. Another $\frac{3}{8}$ " pipe extends from cup to special dividing tee, to be located

directly back of smoke stack, from which $\frac{1}{4}$ " pipes extend, and are tapped into each relief valve. In case engine has no relief valves, tap the oil plug on top of chests and connect the $\frac{1}{4}$ " pipes, putting a check valve as near to the oil plug as possible in order to avoid back pressure. With lever handle of cup in normal position, a charge of about one-half teaspoonful of dry graphite is ready for use by a forward movement of handle, and on return of handle another application can be made immediately if desired.

When valves become dry from engine raising water suddenly or from any other of several causes familiar to locomotive engineers, shut off the throttle and give two or three applications of dry graphite, when the result will be immediate.

At the beginning of the first few trips it may be necessary to make three or four applications before results are obtained. After several trips the wearing surfaces will be well glazed, and one application every forty to fifty miles should suffice to keep the valves and cylinders in smooth condition, and enable the engineer to handle the reverse lever with about half the usual effort.

Previous to our placing this device on the market there were two hundred and eighty-five engines on sixteen different railroads equipped with the Campbell System of Lubrication, this being accomplished by the patentee while regularly engaged as a locomotive engineer.

AN OLD SUPERSTITION.

Old superstitions die hard. It is amazing how long a wrong statement will go unchallenged even when it is ridiculous on the face of it.

Only the other day an old friend bobbed up again on the lips of an apparently intelligent man who was talking to The Silent Partner.

"Ninety-five per cent of the people who go into business fail," was the statement.

Now anybody who stopped to think a second ought to see the absurdity of such a remark. If it were true, any business street in any city would witness the moving-van, the sheriff's writ, the red flag of the auctioneer, on two or three business doors every day in the year.

Yet people go on rolling the silly statement out on every provocation, and people go on thinking that it is true.

As a matter of fact, less than one per cent of all the people who have embarked in business since the civil war have made a failure of it. This is provable by statistics of the commercial agencies.

During panic years the percentage has run slightly higher than one per cent, but in normal times for almost

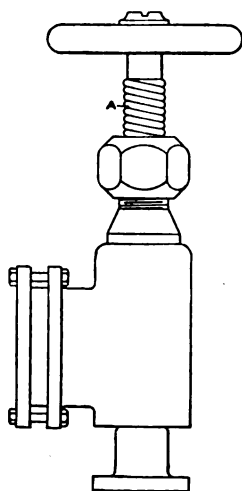
fifty years the failures have been far below one per cent.

But you'll probably hear the old version of it again in a few days.—*The Silent Partner.*

IT IS SAID that the word Demijohn probably comes from the word Damaghan, a town in the Persian province of Khar-san, once famous for its glassworks.

PROTECTING VALVE STEMS.

Most engineers have noticed that stems of valves which remain either closed or open for considerable periods, become coated with some deposit that prevents free movement when the necessity arrives. This is particularly true of ammonia valves, and in this case the deposit is very injurious to the packing in the stuffing box. An easy method to prevent this trouble is by winding a strip of canvas which has been soaked in graphite and oil, around the stem, as shown at A, where the valve is shown closed in the sketch, which is taken from *The Engineer*.



SHOWING PROTECTION ON STEM OF VALVE.

If the valve is open the canvas should be shoved in next to the stuffing box, so as to protect the valve stem which passes through the packing. In small valves care should be taken when winding the stem when valves are left open, so as not to get so much winding on as to prevent closing the valve. This may easily happen if the canvas winding is made too long, as when the valve is closed the canvas may be compressed between the valve wheel and the stuffing box, thus giving the operator the impression the valve is closed.—*Ice*.

TRUTH STRANGER THAN FICTION.

Or Did The Little Boy Lie?

The Independent tells the story of an American who, while watching some moving pictures in a hall in Paris, saw a reproduction of a Broadway throng at the noon hour.

His interest in the old familiar scenes was intensified when he saw his own face and figure in the crowd. When he was close to the camera he was still more surprised to see a valuable watch charm which he had always worn attached to his fob drop and disappear from sight.

He had mourned the loss of this jewel for several months, but he had no idea where it was lost. Then out of the moving throng appeared a young woman, who suddenly stooped and picked up the charm from the pavement.

The man gasped and dropped back in his seat when he recognized the features of the woman as she approached closer to the camera. A few weeks later he recovered his watch charm after he had cabled to the woman to ascertain if there was any truth in the strange coincidence or whether it was all fiction.

POSITION WANTED.

Position is wanted by an American, forty years of age and married. For two years he has been a New York branch manager for a large concern with a salary of \$3000 a year, and commission. During that time he has handled over a dozen salesmen, and had entire responsibility in the matter of credits and the collecting of accounts; in fact, had full control.

Two years previous he was with another large firm where he had full charge of the buying and selling, and where he also enjoyed a salary of some \$3000.

For the six years previous he was manager of a large concern in Chicago where he increased their business during the six years he was with them from \$200,000 to \$1,000,000, and had entire charge of the credit and sales department, and full charge of employing of all help, and the directing of affairs, having in the sales department forty salesmen. He began with that firm when he was about thirty years of age.

Previous to that, and his first position, he was with a large company where he was employed in practically every department of their business, finally reaching the position of assistant manager.

It seems rather strange that such a man should be out of a position and even stranger why he let go of any one of the fine positions held by him.

A FLORIDA INDUSTRY.

"Bavarian pencil? Yes, sir," said the stationer's clerk. "You find the wood so much better in these imported pencils?" "Well, it is undoubtedly a fine quality of cedar. But—"

The clerk smiled.

"But all the cedar for foreign pencils," he went on, "comes from this country, sir. Florida produces the finest lead pencil cedar in the world. Thousands of acres of rich Florida land are given over to cedar production. Ah, so you will take a dozen domestic pencils, then, sir? Well, I assure you that the same quality of Florida cedar is used in them as in the more expensive foreign articles."—*Los Angeles Times*.

The above cutting clipped from the *Los Angeles Times* is perfectly true, the finest cedar in the world for lead pencils is grown in Florida, and Crystal River claims pre-eminence in this respect. Here are situated the Dixon cedar mills using annually millions of cedar logs in this industry. It is well worth while for anyone visiting the state of Florida, to run into Crystal River and visit these interesting mills. The genial and efficient manager, Mr. C. E. Herrick, is always willing to show anyone over the mills and explain to them the way the wood is sawed and manipulated before sending it to Jersey City, N. J., to make into the world famous Dixon lead pencil.—*Crystal River (Fla.) News*.

EASY DEDUCTION.

I eat all sorts of meals—alas!

I fear I am a rank barbarian,

But if 'tis true "All flesh is grass"

I'm still a hay-fed vegetarian.

—*Chicago News*.

A WONDERFUL MAN.

A Man who for Courage and Persistence we
may Take off our Hats.

Senator Gore, the Oklahoma statesman, when a boy of seven was struck in one eye by a stone thrown by a playmate, and lost the sight of that eye. Four years later, an arrow shot from a playfellow's bow struck into the other eye, and it too was darkened apparently forever. Since that day, more than twenty-five years ago, no ray of light has reached him.

But this was no ordinary boy to lose hope and energy and ambition because of even so fearful a misfortune. He would not go to an institution for the blind. Instead, he resolved early to prove that even such a misfortune as his was not the insuperable obstacle to success. He insisted that he should be sent to the public schools. Other children read to him; his teachers helped in every way possible. He took his studies as other children do, aside from the fact that he had to use his ears where others can use their eyes. He was the very essence of determined purpose.

In place of the eyesight which was denied him, he developed a memory which, improving with training and effort, has become the wonder of all who are brought in contact with him.

About eight years ago he married a young woman, Nina Kay, who has proved herself exactly the woman for him. She has been indefatigable in her devotion; has read to him, briefed subjects in which he was compelled to inform himself, looked after details of business which he could not handle, traveled with him, and been adviser, friend, companion, secretary.

Lately the Senator has been receiving treatment at a hospital in Washington, D. C., and it is now hoped that the Senator may regain the use of at least one eye, and this after twenty-seven years of darkness. Since the operation the Senator has had just a glimpse of light in which he saw one of his cuffs. He has not permitted himself to be unduly hopeful, and doesn't propose to be greatly cast down if the operation proves a failure.

"It will be a wonderful blessing to me if it succeeds," he said. "If it fails, I will be none the worse for it."

FOR THE ENGAGED GIRL.

When your "best ever" gives you the much wished for diamond, prick a needle hole through a card and look at the hole through the stone. If the diamond is genuine one hole only is seen. Every imitation stone which resembles a diamond gives a double reflection.

Another test is to place your finger behind the stone and note the skin when viewed through the stone with a watchmaker's glass. The grain of the skin will be plainly seen if the stone is not a diamond, but if the diamond is genuine the grain in the skin will not be discerned at all.

DIXON'S PENCILS GIVE SATISFACTION.

Mr. Harry J. Moreland, Stationer, Corry, Pa., writes as follows:

"I have handled your pencils for about a year now, and they have given the best of satisfaction in every case. I have tried several other brands but have found nothing that will compare with the Dixon."

CEYLON.

By A. HUGH FISHER.

I hear a whisper in the heated air—
"Rest! Rest! Give over care!"
Long level breakers on the golden beach
Murmur in silver speech—
"Sleep in the palm-tree shadows on the shore—
Work, work no more!
Rest here and work no more."

Where half unburied cities of dead kings
Breed poisonous creeping things
I learn the poor mortality of man—
Seek vainly for some plan—
Know that great empires pass as I must pass
Like withered blades of grass—
Dead blades of Patna grass.

"Breathe—breathe the odorous sweetness that is ours,"
Cry Frangipani flowers.
"Forget! Forget! and know no more distress,
But languorous idleness:
Dream where dead leaves fall ever from green trees
To float on sapphire seas—
Dream! and be one with these."

—From *Harper's Magazine* for May.

QUICK RECOVERY.

A dentist in the Rose building has a little daughter who believes absolutely in the efficacy of prayer.

If you want anything pray for it, and you'll get it—that's what she thinks.

The other day her father, who tells the story, was trying to shame her for having disobeyed him.

"What would you do if papa were to die?" he asked her.

"Oh," she told him, "mamma and I'd both pray for another papa for me, and we'd have one the very next day."

—*Cleveland Plain Dealer*.

SUMMER IN THE MOUNTAINS.

Whirring in the green wood,
Humming in the air;
Sighing of a cascade,
Falling somewhere;
Stillness in the tall trees,
Dripping of the pines—
Summer's in the mountains with the same old signs.

Flies along the lake side,
Skimming o'er the glass;
Dandelions glorious in the young, green grass;
Echoes of a long shot,
'Mid the distant pines—
Summer's in the mountains with the same old signs.
—STEPHEN CHALMERS in *New York Sun*.

DIXON's graphite publications sent free upon request.

Graphite

VOL. X.

AUGUST, 1908.

No. 8.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

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CONFIDENCE.

It is a great thing, confidence.

You must have it if you would be happy.

You must believe in yourself and your proposition, if you would go to bed light-hearted and arise properly girded for the fray.

If you worry over the criticisms of the world—if you fear your competitors—if you allow business depression to depress your nervous system—you'll be miserable.

Have confidence in yourself and in the future of your country and your business.

Laugh at setbacks—they're only temporary. If defeated, smile grimly and come up again. The next time it may be the other fellow who will take the mat.

Believe in your star and it will be a lucky one.

Look the world square in the eye. If it's friendly, smile and hold out your hand.

If it tries to trip you, or throw you, duck, dodge, and biff it in the neck.

But don't be afraid. Be confident.

No general ever won a battle who had a yellow streak. Yellow streaks and white flags go together.

The prize fighter who wins the belt is the fellow who believes in himself—who doesn't go sick at the first bat in the eye or the first blow in the stomach. Many a fight has been won when the victor's seconds were about ready to throw up the sponge.

Don't whine. Don't apologize. Don't explain. Don't quit. Smile, plod, stick, fight, win!—*Ad-Results.*

GRAPHITE GREASE FOR FAUCET KEYS.

A writer in the *Brass World* asks: "What grease can be used on the ground key of a faucet that is used in hot water?"

The *Brass World* replies as follows:

"We suggest the use of graphite grease, as the graphite will remain on the key after the grease has been melted out, and thus lubrication will be had."

The Joseph Dixon Crucible Company have been making a graphite faucet grease for a number of years and the grease has found great favor with faucet manufacturers.

ENGINEERING.

The lubricating qualities of graphite are well known to all our readers, and there is, therefore, no need to dilate on this point, but none the less it has always been a source of considerable surprise to us that more extensive use of it has not been made. Of course, there are difficulties to be overcome in many cases, and doubtless among the chief of them may be mentioned the necessity of a suitable flux to carry the graphite, and not only to carry it, but to do so in regular and systematic proportions. We are pleased, however, to note that these difficulties are being very successfully overcome, and that there is now a lubricator on the market, and working very successfully on a number of steam engine installations, that appears to have a very wide field. It is spoken very highly of by users, both as to reliability and economy in oil. It is at present being adapted for use in connection with gas engines, and so we may not have to wait long before some trustworthy graphite lubricator will be available for gas engines of every description. The advantages of such an accessory to gas engine users will appeal to all our readers. It would be difficult to count the number of troubles that are due solely to, or owe their origin to, faulty lubrication in one form or another; but if graphite can be satisfactorily employed on gas engines, as there seems to be good reason to hope that it can and will be before very long, then many of these troubles will soon be heard of no more. When using a mixture of graphite and oil we have seen an 8 H. P. gas engine run for hours at full load with the supply of lubrication entirely shut off, without suffering any ill effects.

—*Kuhlow's German Trade Review and Exporter.*

LAW LANGUAGE.

The following clipping from the *Christian Advocate*, while greatly exaggerating the subject, yet contains much truth:

"If I were to give you an orange," said Judge Foote of Topeka to D. G. McGray, "I would simply say, 'I give you this orange,' but should the transaction be intrusted to a lawyer to put in writing he would adopt this form: 'I hereby give, grant and convey to you all my interest, right, title and advantage of and in said orange, together with its rind, skin, juice, pulp and pits and all rights and advantage therein, with full power to bite, suck or otherwise eat the same, or give away with or without the rind, skin, juice, pulp or pits, anything hereinbefore, or in any other deed or deeds, instruments of any nature or kind whatsoever, to the contrary in anywise notwithstanding'."—*Gregg Writer.*

ESTABLISHED 1827.



INCORPORATED 1846.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

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WHERE IGNORANCE WAS NOT BLISS.

It is unfortunate that one grease may not be used for various lubricating purposes. It would simplify practise and prevent such misapplication as we record here.

A certain concern has occasion to use two of Dixon's Greases, one the cup grease, and the other the waterproof grease for use on cables. In each case the packages containing these Dixon Greases are carefully marked and labeled and full directions are given for their use. In some way, however, probably due to carelessness, the waterproof grease was used where the cup grease should have been applied, and that is how the story begins.

The engineer in charge, while making his rounds noted that one of the sheaves was squealing badly and started to investigate. The mechanic in charge said that they had never had any trouble when using a yellow "dope," and that the trouble was due to the graphite grease.

The engineer asked him to take out the pin and upon ex-

amination it was found that the pin was getting no lubrication at all, due to the fact that the mechanic had been careless in setting the pin and the oil hole was on the pressure side of the bearing. What the engineer said was of so personal a nature that we hardly feel that we should repeat it here.

In speaking of the increase in vaccination and decrease in smallpox Elbert Hubbard has pointed out clearly that sequence is not proof. We are oftentimes wont to lose sight of this fact, however, as did the mechanic in the instance noted above.

It sometimes happens that a new user of Dixon's Flake Graphite applies too much for some given purpose. In such cases there is almost sure to be trouble of a more or less serious nature. Where trouble occurs, it is, of course, not unnatural for the user to lay the blame on the graphite when, as a matter of fact, it was the quantity used that was responsible for the trouble developed. Some are inclined to judge flake graphite as dangerous when it is possible to use too much of it, but this is clearly a most unreasonable view. Ask any cook the result of putting too much salt in the bread—after tasting such bread we do not find it necessary to go to the cook for information concerning the effect. Discretion and care are absolutely necessary to accurate work and good results in any line. Successful engineers recognize this fact. This is one of the reasons for their success.

A CATASTROPHE.

It is said that a cat may look at a king, but it is better for a cat not to look at a medical student, unless it be at a long distance—better for the cat, and better for the student's college.

The class in vivisection at a Connecticut University captured and dissected by mistake the pet cat of a wealthy woman, who has traced the cat's death to the students and is very, very angry. This wealthy and very angry woman has no near relatives, and was supposed to have made her will in favor of the University.

"FLAKE."

The Joseph Dixon Crucible Company of Jersey City, New Jersey, filed application on March 11, 1907, for the trade mark "**FLAKE**", as applied to Graphite, and this trade mark was registered June 4, 1907, No. 62,977.

The word "**Flake**" as applied to the thin, tough, foliated form of Ticonderoga graphite was originated by the Joseph Dixon Crucible Company to distinguish it from the thicker, foliated form of Ceylon graphite, and for very many years the word "**Flake**" has been used by the Joseph Dixon Crucible Company, on its goods and its printed matter as a distinctive mark.

To protect its customers and itself the Dixon Company has registered the word "**Flake**."

PREVENTING CORROSION ON STEAM MACHINERY.

By W. H. WAKEMAN.

Chapter IV.

The pump shown in Fig. 16 is not as commonly used for boiler feeding and similar purposes as other kinds, but it is an excellent kind of a pump, possessing many good qualities. It is called an end packed plunger pump, because the packing is at the ends and not near the center of the water end. One plunger is located at each end of this part, and the two are connected by rods at the top and bottom as shown, which of course causes them to move together, but each is single acting. However, when taken together and considered as one part it becomes double acting.

While many engineers understand the operation of these pumps, there are others, and their number is not small, who have never given the subject careful attention, because it is not considered as important as setting the valves of an engine, but if the pump that supplies water for the boiler is out of order, the engine must soon stop, therefore it becomes just as important for the thousands of young engineers who are taking their places in the field of steam engineering, to understand one as the other. If a pump begins to work imperfectly,

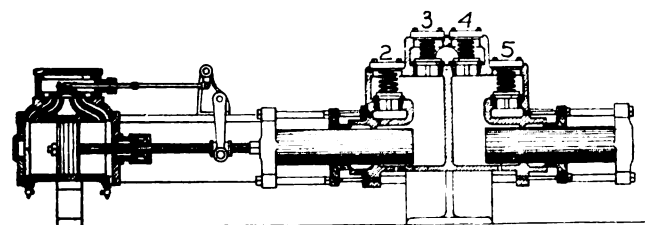


FIG 16

its action often tells the intelligent and well informed engineer what causes the trouble, and when this is understood it becomes an easy matter to apply a remedy.

These plungers are now in the middle of their travel, and for the purpose of illustrating their operation, suppose that they are making an inward stroke, or moving from right to left. Take the left hand plunger first, and as it moves toward the left hand it passes partly out of the pump cylinder, hence water is drawn in through the suction valve 2 to fill the vacancy. This causes the discharge valve 3 to be forced down to its seat.

At the same time the right hand plunger is coming into the pump cylinder, which is divided into two separate parts by a cast iron partition, hence some of the water already there is sent out through the discharge valve 4, while the suction valve 5 is forced down solidly on its seat by the full pressure that the plunger is working against. When this stroke is completed and the plungers begin to move in the opposite direction, all of these valves take positions the opposite of those above described. As this illustration represents one side of a duplex pump, there is another just like it which forms the other half.

Only four valves are presented here but others are located where they cannot be seen in an illustration of this kind, and the number increases with the size of the pump. As a general rule valves of the same size are used in all sizes of a given kind of a pump, and increased capacity is secured for the larger

sizes by supplying them with more valves rather than to keep the number nearly or quite constant, and increase the diameter for large sizes.

When a pump like Fig. 16 is to be laid up for several months, the caps above the water valves ought to be taken off, the valves and springs taken out and the whole cleaned thoroughly. Every defective part ought to be replaced and left ready for service. As these parts are usually made of metal that does not rust and corrode easily, no special treatment may be necessary, but it will do no harm to give them a light coat of

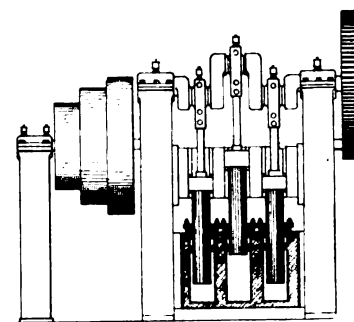


FIG 17

cylinder oil. If soft rubber valves are used, do not let oil come in contact with them, as it will do more harm than good.

All of the packing in the stuffing boxes of these plungers ought to be carefully removed, taking care not to scratch the metal surfaces with packing hooks of any kind, provided the packing does not come out easily, making it necessary to use force and exercise patience. Give the plungers a coat of Dixon's Waterproof Graphite Grease, and force them through several complete strokes in order to cover every part with the rust preventer.

The steam end may be given a thick coat of cylinder oil, which ought to be carefully rubbed over every part. Lift the slide valves and get oil under them to prevent the valve seats and faces from rusting. Give the cylinder a generous supply intelligently applied and then move the piston through two or three strokes in order to get oil between it and the cylinder.

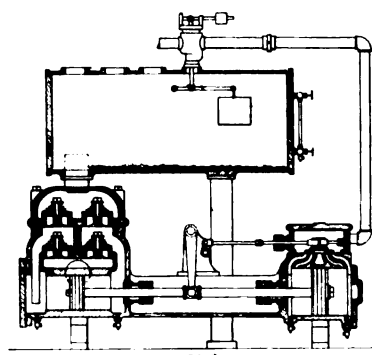
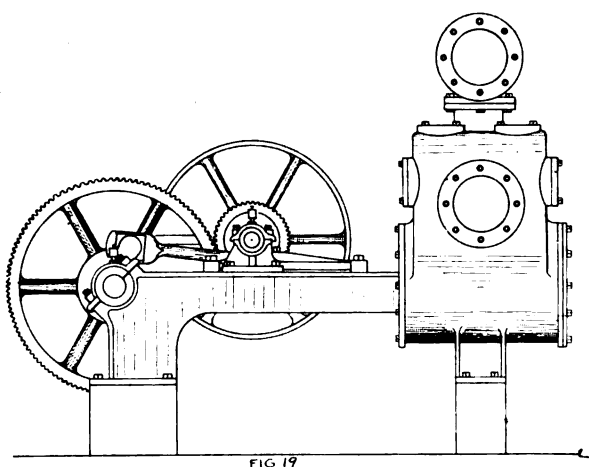


FIG 18

Fig. 17 is an improved form of power pump, and as this term is not as well understood as it ought to be, I will say that it means any form of pump that is driven by means of a belt, gears, or a friction drive, from shafting or other power transmitting devices that are kept in motion by power from another source.

This particular kind of a pump is fitted with a cone pulley on which there are three steps, therefore three speeds are available, giving a wide range of capacity to suit varying conditions. This is a triplex pump because it is fitted with three plungers. As they are driven by cranks that are set at an angle of 120 degrees, or in other words that are at equal distances apart when their positions are located on a circle, water is delivered in a nearly continuous stream, although not always at the same rate.

There is little bright work on these pumps, but where one of them is to be out of service for several months the pulley



ought to be given a coat of Dixon's Silica-Graphite Paint to preserve it from rust. It is not necessary to remove this when the pump is put into service again, as it will wear off when the belt runs over it.

Of course, all packing should be removed from the plungers and measures taken to prevent corrosion as mentioned in connection with Fig. 16.

Fig. 18 represents a duplex pump fitted for hot water service, with a receiver located on the same base. Hot water resulting from the condensation of steam in a regular heating system, in jacketed kettles, or wherever steam is used for heating purposes, gravitates to the receiver and when the water level rises high enough to raise the float shown, it opens the throttle valve of the pump which starts up at once and delivers water to the boiler as long as it comes to the receiver.

Thousands of these machines are in use during the winter season, but are not wanted during the summer months. There is chance for much improvement in the way that some of them are kept while not in active service. Whoever shuts them down in the spring seems to think that the fall is so far off that they may not live to see it, or at least they will not be in charge of the plant then, consequently it is all right to slight their work as much as possible and let somebody else take care of the consequences. This is a short sighted policy that ought not to be adopted by intelligent men.

When one of these machines is shut down for the summer, both water and steam ends ought to be protected from rust and corrosion as explained in connection with preceding illustrations. While the steam chest cover is off, it is a good time to inspect the valves and notice how they are set, and what improvements can be made along this line. If the pump has worked well there is no need of changing the valves, but their position may be noted as follows:

Place the pistons in the middle of their strokes, then put each slide valve where it will cover the ports equally on both ends. There should be an equal amount of lost motion on both ends of each valve. If there is not it may be due to some peculiarity of that particular pump that does not apply to others.

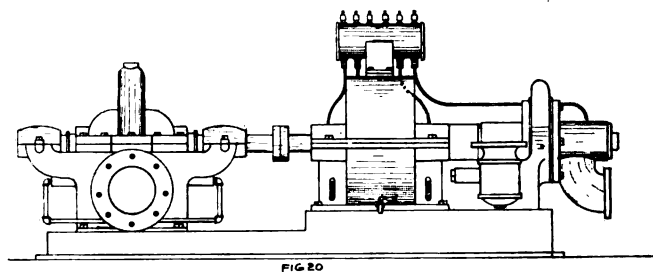
If the pump did not work well in service, and the valves are not in position as above described, measures should be taken to set them properly. In some cases the lost motion is provided by adjustable nuts on the valve stems inside of the steam chests, while with others it is secured by tappets on the outside, but if the principle is understood by the engineer he will easily see how it is done in his particular case and make adjustments accordingly.

For pumping hot water the valves must be made of hard rubber, or brass, as soft rubber valves will not stand the heat. These must always fit their seats perfectly, or else water will not be forced out against pressure. Put two of these valves together, face to face, and if light can be seen between them they need refacing, and this can be done by placing a piece of coarse sandpaper on a board and rubbing the valves over it until the faces are perfectly true.

The outlet pipe from this receiver should be screwed up into it by means of a long thread as shown by the dotted lines, in order to prevent sediment from going to the pump. I have had charge of the heating system in one building for fourteen years, and sediment continues to come to the receiver, hence it is cleaned out every spring.

When a new gasket is put on the head of a receiver, the side that goes toward the body should be left clean, but the other side should be coated with Dixon's Pipe-Joint Compound. If this is not on hand use fine graphite and mix it with cylinder oil. By this means the head can be taken off many times without breaking the gasket.

Fig. 19 represents a double acting, piston, horizontal power pump that is designed to create a vacuum on the outlet of a steam heating system, to take the condensed steam or hot water from a surface condenser, or for any similar service. Although intended for comparatively light work it is a powerful machine, because the belt pulley is large and it is on a shaft that carries a gear of small diameter, which meshes into a larger one on a crank shaft, thus securing a good leverage on the piston.



These gears should always be well lubricated with Dixon's Heavy Machine Graphite Grease in order to prevent unnecessary wear and uncalled-for noise. Do not fail to get all water out of this machine when it is to stand idle for several months, and take necessary precautions to keep the internal parts in good order. If the belt which drives this pump is treated with Dixon's Traction Belt Dressing it will transmit the re-

quired power without being drawn tight enough to pull the joints apart, and when it is not to be used it can be rolled up and put in a dry place until wanted again, without danger of being spoiled during the period of idleness.

Fig. 20 illustrates a steam turbine, driving a centrifugal pump by direct connection. This is a thoroughly scientific combination, as the turbine is well adapted to such work. Directions for taking care of a turbine that is to be laid up will be given in another chapter.

A centrifugal pump requires only a little care, but the blades should be wiped dry and covered with Dixon's Yacht Plumbago, which is commonly called "Pot Lead." It is a fine grade of flake graphite applied with varnish or shellac, and when thus used it gives the blades a smooth and glossy surface that prevents corrosion. It is not necessary to remove it before starting the pump.

(To be Continued.)

CARE OF AUTOMOBILES.

A neat little book of the above title has come to our attention. The title page reads "Care of Automobiles, A Non-Technical Treatise for the Business and Professional Man," and an effort is made to give everyday information that the average owner of the motor car will have occasion to use. The book is published by Doubleday, Page & Company of New York City, and has a copyright of 1908.

As is, of course, to be expected, there occur various references to the use of graphite. One we note under the sub-heading, "Care of Transmission and Driving Mechanism." This chapter goes on to say that chains should be cleaned and lubricated as soon as they develop any snapping noise. It is recommended that the chain be removed and placed in a pan of gasoline, and "scrubbed" with an old tooth brush. After this operation the chain should be again rinsed in fresh gasoline and wiped dry. Then, "prepare a bath of melted tallow and graphite; one part graphite and seven parts tallow."

While this recipe will be found good no doubt, we would recommend Dixon's Graphite Chain Compound which is prepared especially for this purpose. In its use you are always insured of not only proper ingredients but the proper proportions. As this compound is solid at ordinary temperatures it does not collect dirt and grit as any fluid lubricant necessarily must.

Again on page 35, under heading "Lubricants and Lubricating," we find the following reference: "Very successful results are obtained in the use of the heavy graphite grease in the transmission." We believe that we may safely say that the best known graphite grease for this purpose is Dixon's Graphite Fiber Grease No. 688, which is of a heavy consistency. In addition to the very general use of this product by motor owners, there are a number of manufacturers who have adopted this grease and recommended it to purchasers of their cars.

The author of "Care of Automobiles," Mr. Burt J. Paris, for business reasons makes no reference to any branded article in any part of this book. We are very glad to be able to say, however, that in his private capacity Mr. Paris has expressed to us his sanction of the use of Dixon's Flake Graphite.

DIXON GRAPHITE PRODUCTS.

The Joseph Dixon Crucible Company continues to maintain its reputation as the largest producer and manufacturer of graphite for railroad use. The Dixon Company's lubricants, crucibles and pencils are in universal use. Dixon's Silica-Graphite Paint, so well known as a protective coating for steel cars, covers nearly everything in Atlantic City, in the way of exposed iron. This sterling preparation was selected by the government engineers for the United States lighthouse, on which Dixon's Black was used for the centre division. The iron work of the Young's Million Dollar Pier is painted with Dixon's Silica-Graphite Paint; likewise the iron work of the boardwalk, the iron poles and refuse boxes. Haddon Hall's roof, looking so fresh and new, is painted with Dixon's Silica-Graphite Paint, and the Chelsea Hotel also has its roof protected with Dixon's famous preserver. The stack at the Hotel Jackson isn't varnished every morning—it was painted five years ago with Dixon's Silica-Graphite Paint.

—*Railroad Age Gazette.*

THE CONDITIONS MET BY THE TRAVELING ENGINEER.

CHEYENNE, WYO., April, 19, 1908.

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

GENTLEMEN:—Yours of the 14th inst. with folder inclosed received. I have been receiving your publications for a long time and have read these with interest, for which I thank you. The traveling engineer is up against "the real thing" on lubrication in these days of high pressures and maximum tonnage with oil allowance figured by the drop, eng.-rating at 100% with everything in perfect condition. I have used graphite for years with good results. And it has given greater efficiency to valves and cylinder packing. While I am not fortunate enough to own an auto, I have friends who do, and who by my advice have used graphite in the crank case sparingly with good results.

I would be pleased to have your booklet "Graphite as a Lubricant," as I much am interested in the subject. I have and will make good use of any publication I receive.

Very truly yours,

F. L. ROBINSON.

SIMPLIFIES AND SWEETENS.

We have been in the habit of hearing these words applied to machinery, more particularly by our English cousins.

A saw is spoken of as making a sweet cut; and again as cutting sweetly.

It has been well said of Dixon's Ticonderoga Flake Graphite that it simplifies and sweetens. It is that which enables the machine to perform its work with less friction, less noise and less wear. It sweetens the work of the machine and the work of the man in charge of the machine, and when that man goes to bed at night sweet slumber and sweet dreams await him.

"It WOULD be sad if we could not remember a friend without a monument."

WHY HE LIKES GRAPHITE.

Charles E. Duryea seems to strongly favor graphite as a lubricant where it can be used. He says: "Graphite seems to me to be an ideal lubricant because it will not burn, smoke, carbonize or get gummy. Further it seems to fill up the pores of the iron and then the friction is that of graphite against graphite, instead of metal against metal. Of course it is the intent to have always a film of oil between the two metal surfaces, but oil in a hot engine gets very thin and either squeezes out or evaporates and leaves the walls dry. I have driven up to a stopping place with oil flowing freely and smoking a cloud, but with the engine turning freely, only to be unable to start ten minutes later because the oil had all evaporated from the walls, leaving them so dry and sticky the engine could not be cranked fast enough to make a magneto spark. Graphite would not disappear like that. I have used graphite lined bushings for thousands of miles with no attention whatever and although they did not run quite so freely as an oiled bearing, they more than made up by their freedom from attention and dirt. I have experimented with an engine having no oil about it and secured fairly good results. I am not sure but that some day we will have that kind. The fault I found was that with no oil on the rings, it would not hold compression so well as an oiled engine, and this stopped the experiment for the present. So much for the advantages. The thorn of the rose lies in the fact that it is difficult to feed if mixed with oil. It settles to the bottom of the oil cups and clogs them. It goes to the bottom of the crank case along with the grit one prefers not to stir up. If fed thickly mixed with oil, the oil disappears, leaving the graphite as a paste, which may be too thick to flow, and one part of the bearing will get dry and cut while another will be all right. My experience indicates that you want an all graphite lubrication or else practically an all oil one, but that a little graphite will greatly improve the latter. I like to squirt a little graphite into each bearing and cylinder every morning. Also a little into the crank case on top of the oil.—*Automobile Dealer and Repairer.*

MILLIONS OF ACRES

Of New Land Made West of the Mississippi by Irrigation, and many Millions of Dollars Added to the Wealth of the Country.

Very few in the East know, but west of the Mississippi everybody knows more or less about what the government and the states are doing, and what private capital has been able to do under their wise legislation. A recent article by William R. Draper in the *Independent* sums up the situation.

Starting only seven years ago, the new irrigation movement has already twenty-four projects in progress, and has taken in \$37,000,000 from the sale of lands, to be devoted to reclaiming other lands now useless. The government now owns 150,000,000 acres of irrigable land, by which is meant land that is not cultivable, but may be made so by the introduction of water. Under treatment at present are 4,000,000 acres, capable of supporting 100,000 families. The settler pays 50 cents or a dollar per acre for this land, and \$20 to \$60 per acre for perpetual water rights; the latter payment being divided over a period of ten years, so that the land itself earns it.

Every forty acres of these new-made farms will support, and probably enrich, from five to ten people. The 4,000,000

acres now in process of redemption will be a more valuable addition to the national wealth than a hundred times that area of foreign conquest. The 150,000,000 acres to be redeemed will, within a generation, give homes and prosperity to a population as large as that of the United States two generations ago.

This is one of the trifles that the statesmen of the Republican party, in state and nation, have been doing as part of their yearly routine. To them, it has hardly seemed worth boasting about; they take it as a matter of course that the party should do things.—*The Evening Mail.*

THE TWO KINDS.

By ELBERT HUBBARD.

In every business house there are two distinct classes of employees. One we may call the Bunch, and these are out for a maximum wage and a minimum service. They are apt to regard their employer as their enemy, and in their spare time they persistently "knock." They keep bad hours, over-eat, overdrink, overdraw their salaries, and are "off their feed" at least one day in a week.

The other kind get their sleep, take their cold baths, do their Emersonians, join no cliques, and hustle for the house.

If I were a youth I would not compete in the twelve-dollar-a-week class. Like George Ade, who left Indiana and went to Chicago in order to get away from mental competition, I'd set the Bunch a pace. I would go in the free-for-all-class. I would make myself necessary to the business.

No matter how "scarce" times are, there are a few employees who are never laid off, nor are their wages cut down. These are the boys who make the wheels go round. And it isn't Brains that counts most; it is Intent. The difference is this: the Bunch plot and plan for personal gain—for ease and a good time. The other kind work for the house, and to work for all is the only wise way to help yourself.

—Reprinted from the July, 1908, *Cosmopolitan.*

REJECTING MATERIAL.

The rejection of material, even when rejection is permitted, is sometimes very troublesome. It is much better to see that you get the right kind at first.

The superintendent of a very important station in the government employ received a supply of graphite bought by the purchasing officers, and was instructed to reject it if it was not found entirely satisfactory. To quote his words, the graphite was not a flake graphite and looked more like lamp black or stove polish.

He rejected it after trial and in time received a supply of Dixon's Flake Graphite. Rejection, however, is quite a serious matter, as it often takes requisitions a long time to go through and a rejection means another long and annoying wait, and sometimes it means damaged machinery if not a shut-down.

YES, CERTAINLY.

A broad minded person is one whom we can convince that our way of thinking is right.—*Anon.*

USING GRAPHITE FOR BOILER COMPOUND.

Having frequently seen in various engineering papers references concerning the use of graphite as a boiler compound, I feel prompted to give my experience. I have used it considerably on standard water-tube boilers and find it very satisfactory, as far as removing scale from the drums is concerned, and it will also prevent the formation of new scale in the drums; but so far I have failed to make it do anything for the tubes.

I usually put from five to ten pounds on the baffle-plate in the top of the drum when washing the boiler. I think likely some goes over into the engine; I certainly hope it does. But on removing the manhole plate the scale is found to have all slipped down to the bottom of the drum; and it looks about as much like a pile of very thin shingles as anything. It is very common to obtain pieces of scale less than $\frac{1}{8}$ of an inch thick and fully two feet across, and so delicate as to make it almost impossible to handle.

Sometime ago I visited a plant some little distance from here, and knowing that the water in that locality was inclined to make considerable scale, I asked the engineer what he used for boiler compound. He showed me a barrel of some chemical that appeared to be soda ash, although it may not have been. He also told me the quantity the salesman had told him to use for each boiler a day, which was very little. He said it worked very nicely. Another thing the salesman had told him to do was to use quite a quantity of coal oil each day. I think it is the first time I heard of a boiler-compound salesman advising the use of anything but his own compound. The engineer is at a loss to know whether it is the compound or the coal oil that is doing the work.

—A. G. K., LA SALLE, ILL., in *Power*.

CARE AND PRESERVATION OF WIRE ROPE.

Probably too much cannot be said on the care and preservation of wire rope. In many cases lives of workmen and others depend on the stability and strength of a wire rope. There seems to be more confidence placed in a steel wire rope than in one made of manila, and unless the wire rope is looked after and its strands preserved it is a case of misplaced confidence.

In the construction of wire ropes the wires should be perfectly lubricated while they are being laid, and the whole rope then, if the dressing is sufficiently thick and heavy, is well prepared to resist the corrosive action of a damp atmosphere.

The Dixon Company sells graphite to rope makers for just this purpose, but after the rope maker has done his part, then the user of the wire rope should not forget that the rope still needs care and attention.

Most manufacturers of wire ropes prefer graphite mixed either with vaseline, linseed oil, palm oil or some other vegetable oil. Experience in mines shows cases where corrosion and breakage of hoisting rope could be traced directly to the dressing used.

It should be pointed out that if a rope dressing is used that hardens on exposure to the atmosphere care should be exercised to see that there is no danger of the rope being thrown off the sheave by reason of accumulation of hardened lubricant in the thread.

A proper graphite dressing wards off corrosion and reduces

frictional wear. It should be applied every fortnight in dry, or nearly dry, atmosphere, and where the rope is liable to be rubbed it should be applied more frequently.

In moist atmosphere or where a rope is exposed to moisture, the dressing should be applied weekly or even oftener if found to be necessary from the condition of the rope.

Frequently it is found preferable to apply a rope dressing while hot by slowly passing the cleaned rope, as all rope should be cleaned of dust and dirt, through a box or funnel containing the composition.

Tar is frequently used, but we do not find it ever recommended by experienced or careful people, and we have heard of superintendents cleaning wire ropes by passing them through a trough of hot oil, which removes all the tar, then the rope is cleaned thoroughly of all accumulation and dressed carefully with a graphite dressing.

DIXON'S "ETERNO" PENCILS.

A Pencil that is Steadily Gaining in Favor, and Winning Commendations from all Parts of the Country.

While we have many letters and expressions most favorable to Dixon's "Eterno" Pencils, we are not always privileged to make public such letters. We have, however, permission to publish the following, which we do with much pleasure.

WASHINGTON, D. C., May 18th, 1908.

*Joseph Dixon Crucible Company,
Philadelphia, Pa.*

GENTLEMEN:—I hereby acknowledge receipt of your letter of recent date, transmitting samples of your fine Dixon's Pencils. I appreciate your thoughtfulness of me personally and will say that in my judgment the Dixon make of pencils exceed all others I have yet tried. The samples submitted for my inspection are found to be of the highest standard as to quality and finish. In my division—"Public Debt"—we prefer the Dixon.

I have a daughter on a tour of the world and having tested your samples before starting, determined to "uncase" her fountain pen, pack it away in her trunk and rely on the Dixon's "Eterno" for her correspondence during the trip, aboard ship, on the cars, or even at the hotels en route, than to depend on corroded pens and bad ink usually supplied. I will anticipate daughter's report to be that the "Eterno" is a more suitable travelling companion than a fountain pen, liable to leak and troublesome to keep in order, a typewriter or any other device I have yet seen.

With your pencil's protected point it is more cleanly; is always ready for use; requiring no care or space to carry and is in every way adapted for the use and convenience of the tourist. She takes one of the same with her to Peking, China, for her brother J. Paul Jameson, who is connected with the American Legation, Peking, where she expects to remain for a time, perhaps a year. Most of her letters to us at home will be written by the "Eterno," and we may test the copying qualities of the writing later. I have no fears about the result.

Respectfully,

A. B. JAMESON.

DIXON'S graphite publications sent free upon request.

GREAT MEN BORN 1809.

Munsey's Magazine makes mention of great men whose centenaries will be celebrated next year. They are as follows:

Felix Mendelssohn Bartholdy, the great German musician, born February 3rd, 1809.

Edgar Allan Poe, the famous American poet and writer of tales, born January 19th, 1809.

Abraham Lincoln, sixteenth President of the United States, and one of the greatest figures of American history, born February 12th, 1809.

Edward Fitzgerald, the translator of Omar Khayyam, born March 31st, 1809.

Richard Monckton Milnes (Lord Houghton), statesman and poet, born June 19th, 1809.

Oliver Wendell Holmes, the American poet and essayist, born August 29th, 1809.

William Ewart Gladstone, the famous British statesman, born December 29th, 1809.

Alexander William Kinglake, the historian of the Crimean War, born August 5th, 1809.

Frederic Francois Chopin, the famous Polish musician, born March 1st, 1809.

Alfred, Lord Tennyson, the foremost English poet of the Victorian era, born August 6th, 1809.

Charles Darwin, the English naturalist, chief founder of the theory of evolution, born February 12th, 1809.

BEGGARS.

The *New York Herald* tells us that there are about four thousand strictly professional beggars in New York City, and that there is no class of people shrewder or keener observers of human nature than these same beggars. They know how to beg as well as the gypsy knows how to tell fortunes, and this they have learned by close attention and experience. They have made a scientific study of their calling that has enabled them to formulate a working conclusion on which they act in their intercourse with men and women.

They know just what to expect under all possible conditions and combinations, and then make their calculations accordingly and seldom or never fail.

In the first place, they receive more funds in the aggregate from women than from men. The gifts from the women are smaller, but they are far more numerous.

The oldest among these scientific and professional beggars have been interested enough to keep records by which they are enabled to check up their systems as well as an old-time professional gambler.

They figure it out that only one man out of every 300 gives anything to the beggar, but even this small part counts up well during the busy day or week on a crowded thoroughfare.

Curiously enough, if there are two men together the beggar can count on a gift from each 240 men, because a man likes to appear liberal to his fellows.

Then again, if there are three men together a gift will come from each 206, but if you get up to four men together it is one gift for each 192, for the four apparently so interest one another that the beggar doesn't get the consideration that comes from three or two in a group. These figures hold almost the same with women, excepting that when two women are to-

gether a gift from one will be followed by a gift from the other, and three or more together, as a rule, overlook the beggar entirely.

Restaurant districts are favorite stamping grounds for the metropolitan beggar, and his chances are twelve per cent. less for getting anything from the man going to a restaurant than they are for getting from the man who has just dined well. Such is the effect of a good meal.

Women are more liberal when they are going shopping than after they have been shopping, and this is quite natural. Then again, women are more likely to give to men, and men are more likely to give to women. Apparent suffering seems to appeal more to women than to men. Thin clothing in cold weather, open neck, bare sleeves, stockingless feet, and all such devices have a strong influence on women, as do blindness, lameness and other bodily infirmities. Men are more likely to give when the beggar puts in the appearance of trying to earn a living by offering for sale pencils, shoestrings, or other notions. An effort to play on some musical instrument makes a strong appeal to all and the poorer the music the more effective the appeal.

Beggars wearing overcoats, wraps or gloves usually get the cold shoulder from those to whom they appeal.

The condition in Wall Street also affects the beggar, as a rising market is better for a beggar than a falling one. What are known as the lower middle classes are more liberal to beggars than persons well to do or wealthy.

It is to the beggar's advantage to appeal to persons going to the theatre, when they are buoyed by expectation of pleasure, rather than when they are returning and relaxation of energy has set in.

THE POPULARITY OF THE CIGARETTE.

The *New York Times* publishes an article from London in which it is said that according to a recent estimate, \$75,000,000 are spent annually for cigarettes by smokers in the United Kingdom, \$45,000,000 for pipe tobacco, and \$5,000,000 for cigars. It is calculated that 80 per cent. of the men use tobacco in some form. The average consumption of cigarettes daily is eight per man. Pipe smokers consume at least six pipefuls a day.

A prominent London tobacconist on seeing the figures, said: "The cigarette has gripped Britons as it has gripped the rest of the world. The clay pipe is practically dead, other kinds of pipes are being relinquished for cigarettes. Even hardened pipe smokers are giving way. Cigar smokers are coming into line, too. The chief reason is the convenience of the cigarette, the comfort of the pipe is reserved until night. Then again, when night comes the cigarette often triumphs over the pipe, for no cigarette smoker ever relinquishes them when once they have exerted their influence. They appeal to all classes."

Sir Walter Raleigh made no mistake when he introduced tobacco into England.

Little Albert—Mamma and papa keep me worried all the time

Little Gilbert—What do they do?

Little Albert—Mamma won't let me stand on my head and papa fusses because I wear my shoes out so fast.

AMERICAN MEN HARD HIT.

But it may be there is Truth in what he says, for we do read the Papers and we talk very much like the Papers we read.

Eustace Miles, the well known writer on physical culture, finds it difficult to size up the American man or woman. As to the man, however, he says that it strikes him very forcibly, that he lives like a Frenchman—largely on the surface. True, he has depth, but he impresses one very little with anything beyond the surface. Ask an American a question—any question—and he will say, "Well, it's like this," and immediately give some sort of an answer with never a shadow of modesty. The rightness or wrongness of the answer does not matter. The fact remains that the answer is given with confidence and with the impression of independent thought.

I have often wondered, however, if the average American really thinks so much. Does he not very often get his notions second-hand from his paper? Here in the Pullman car in which we are traveling there is not a single seat without at least one newspaper. Is the average American's judgment really independent of what he reads, or does the paper hypnotize him into thinking that he has arrived at conclusions?

Are Americans, at least those whom one meets on the surface and during a brief visit, really so overwhelmingly clever, or are they too brilliant to be clever?

OLD WHEELMEN MAKE NEW CONVERTS.

It is one of the features of the present day revival in cycling, that those who are returning to the use of the wheel show all the enthusiasm of a religious convert. They are so pleased at getting into their old stride that they are never so happy as when they are proselyting among their acquaintances, especially among former riders, and bringing them back into the fold. A Philadelphia man, who lives some seven miles away from his place of business, was recently impressed with the amount of healthful fun he was missing by not using the wheel, now that it really is in style again, and he not only began cycling himself, but put the other four members of his family on wheels early this spring. In addition, he has interested half a dozen of his male neighbors, and now there is a congenial little bunch of cycle riders in his neighborhood, where formerly the traction company had levied its daily tax on all for the privilege of hanging upon its straps.

AN ICE WEIGHT.

A young couple out in Osborne County became the proud parents of a little girl the other day. They wanted to weigh the youngster as soon as she was dressed, but had no scales. Just then the iceman came along and they borrowed his scales. To their surprise the little one weighed forty-four pounds.

—*Lookout.*

CYCLING EVENTS IN PROFESSION.

That the bicycle is still very largely in evidence and that the motor cycle is rapidly increasing, is shown by the fact that there were officially scheduled for the Fourth sixteen large racing events. No better proof could be obtained that the renewed popular interest in cycling affairs is no myth. An additional proof is added in the way of an increased demand for Dixon's Cycle Lubricants.

Productions of the Dixon Crucible Co.

Dixon's Black-lead Crucibles and Retorts, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

Dixon's Brazing Crucibles, made in several shapes for dip-brazing.

Dixon's Graphite Boxes and Covers, for baking carbons and filaments for electric lighting.

Dixon's Fine Office and Drawing Pencils, unequalled for smooth, tough leads and uniformity of grading.

Dixon's Colored Crayons, in wood or solid. For schools, railroads, editors or factory.

Dixon's Lumber Leads, black or colors; for green or dry lumber.

Dixon's Metal Workers' Crayons.

Dixon's Felt Erasive Rubber, for erasing pencil marks, typewriter work or ink.

Dixon's Carburet of Iron Stove Polish, the old reliable; in cake.

Dixon's Pure Flake Lubricating Graphite, a solid lubricant for all frictional surfaces.

Dixon's Special Graphite No. 635, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

Dixon's Electrotyping Graphite, used by the majority of practical electrotypers of this country.

Dixon's Hatter's Lead, for coloring hat bodies.

Dixon's Plumbago for Shot Polishing.

Dixon's Plumbago for Powder Glazing.

Dixon's Plumbago Foundry Facings.

Dixon's Yacht Plumbago, for lubricating and smoothing bottoms of yachts.

Dixon's Graphite Waterproof Grease, for gears, wire ropes, hoisting chains and general machinery.

Dixon's Graphite Axle Grease, for trucks, wagons, carriages.

Dixon's Graphited Wood Grease, for use on trolley car gears which are enclosed in a gear case.

Dixon's Graphited Oil, for use in all places where the use of a gear grease is impracticable.

Dixon's Graphite Cup Greases, for use in cups or open bearings, on spindles, shafting, etc.

Dixon's Oiled Graphite,

Dixon's Lubricating Compound No. 688, for enclosed gears of electric automobiles.

Dixon's Silica-Graphite Paint, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

Dixon's Graphite Pipe-Joint Compound, for steam, gas and water piping, smearing gaskets and flanges.

Dixon's Automobile and Bicycle Lubricants.

Dixon's Graphitoleo, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

Dixon's Commutator Graphite, will glaze commutator with the finish so much desired by electrical engineers.

Dixon's Graphite for Type Setting Machines.

Dixon's Graphite for Talking Machines.

Dixon's Motor Chain Compound, for transmission chains.

Dixon's Crucible Clay and Graphite Mixture, for lining and repairing fire boxes.

Dixon's Stove Cement, for repairing stove or range lining.

Dixon's Traction Belt Dressing, for leather belts.

Dixon's Solid Belt Dressing, convenient for those who prefer a solid dressing.

Dixon's Graphite Resistance Rods, from one-eighth to one inch diameter; any resistance required.

Dixon's Graphite Brushes, for motors, dynamos and generators.

Dixon's Graphite Products for Electricians.

Special circulars with detailed information sent on request.



ADDITION TO DIXON PENCIL FACTORY IN COURSE OF CONSTRUCTION.

This new structure will increase the floor space of the factory some 30,000 square feet. The temporary lull in business has been taken advantage of to put this building up, though it has long been needed. It will so increase the facilities and capacity of the Dixon pencil plant as to enable the company to properly and promptly handle the increasing business that each year has brought.

LETTER FROM LINOTYPE OPERATOR.

MIDDLETOWN, OHIO.

Joseph Dixon Crucible Company.

After giving the sample can of Dixon's Linotype Graphite No 635 a thorough trial, have found that it is a great aid in keeping the linotypes in a smooth running condition. The benefit of its use is especially noticeable in polishing the channels of the magazine. Used on mold-wiper it keeps mold beautifully polished and free from metal. By its use I have been able to relieve tension on justification springs, which, of course, saves wear and power bills.

No. 635 is O. K., and I wish to thank you for your kindness in sending me the sample can which has caused me to be a continued user.

Very truly yours,

A BARGAIN.

A Paris shopkeeper wrote to one of his customers as follows:

"I am able to offer you cloth like the inclosed sample at nine francs the metre. In case I do not hear from you I shall conclude that you wish to pay only eight francs. In order to lose no time, I accept the last mentioned price."

—*Democratic Telegram.*

LUBRICATION IN COAL BREAKER SERVICE.

MOOSIC, PA., April 16, 1908.

Joseph Dixon Crucible Company.

GENTLEMEN:—*In re* your favor of the 7th inst., we are using your graphite grease in a very dusty breaker. The journals are all equipped with Lackawanna Grease Cups. In these we have tried different lubricants, some of them combined with graphite, but have found nothing to equal Dixon's Graphite Cup Grease. We have never had a hot journal with it, have perfect cleanliness, the oil risk being almost eliminated.

There is no waste, and there is a great saving in labor, for we fill the cups only twice a week instead of having to oil four times a day, as we did when we were using oil before the adoption of this combination.

Very truly yours,

ROBERTSON & LAW.

GRAPHITE IN THE CRANK CASE.

EDITOR *Horseless Age*:—

In reply to the inquiry in the April 22 issue of the *Horseless Age*, signed "Throttle," I desire to say that I have used flake graphite in the oil in my crank cases as well as in every bearing and moving part of both auto and launch, except commutators. I use Dixon's "Motor" Graphite for the crank case and Dixon's No. 1 for mixing with transmission and cup greases. I find that by the use of the graphite with the oil or grease bearings and gears show no perceptible wear after long use and hard service.

—ANDREW P. WILLIAMS in *Horseless Age*.

"WHILE there is life there is hope," said the lazy boy. But when there is not much life there is not much hope.

TROUBLE-MAKERS.

According to the *New York Evening Sun*, some people seem to be born into this world whose chief aim in life is to make trouble of one kind or another. They are never contented unless they are stirring up a mess of some kind that is going to disagree with all except themselves. At the present time the chief among the trouble-makers in the East is the Sultan of Turkey; in the Western Hemisphere it is Cipriano Castro, President of Venezuela, who is once more sticking out his tongue at the United States.

He has stirred up more trouble in the West than has his Eastern rival as a trouble-maker in the East. He has kept presidents of our own Republic and kings and emperors awake nights by his arrogant treatment of their demands. With one small gunboat and an army of hirelings he has sat in the game with the great nations of the world, and has never been called but once. What is quite as remarkable, he has held his own restless, turbulent country in the hollow of his hand for a decade. He is the most dangerous kind of a bluffer—the man who believes in his bluff.

He believes that he is a Man of Destiny, and once he pointed to a particularly bright star and said, "That is my star; when it falls I shall fall; not before."

The rise of Castro to the presidency from an ordinary herdsman is interesting reading, and it shows what a man can do who absolutely believes in himself. The cultivated Spaniards of Venezuela hate and detest him to a man. The populace has usually been with him, however, owing largely to his democratic ways and his lavish entertainments in the shape of public balls and bull-fights.

As a specimen of physical manhood, he is far from the ideal, as a more awkward figure would be hard to imagine. It is said that his dislike for the former American Minister originated because of that officer's tall stature, which completely overshadowed the President's diminutive person.

The *Sun* adds: "He is likely to stay there until death, and as he is only 45 years of age, the 'Monkey of the Andes' will probably continue to rule Venezuela to the delight of his populace and the annoyance of the civilized world for many years to come."

Venezuela means "Little Venice," it may be remarked, and was so named by Amerigo Vespucci, who sailed into the great bay of Maracaibo in 1499 and fancied a resemblance between an Indian village built on piles to avoid inundation and the Queen of the Adriatic. The name is one of the most absurd possessions of the country, full of humorous features.

THE LATE Frederick R. Coudert, the noted lawyer and wit, had a great fondness for children. He collected indefatigably the quaint sayings of children, and one of the treasures of his library was a small manuscript volume, called "A Child's Dictionary," and these are some of the definitions that Mr. Coudert would read from it:

"Dust—Mud with the juice squeezed out of it."

"Snoring—Letting off sleep."

"Apples—The bubbles that apple trees blow."

"Backbiter—A mosquito."

"Fan—A thing to brush the warm off with."

"Ice—Water that went to sleep in the cold."

—*Boston Herald.*

WATCH YOURSELF GO BY.

Just stand aside and watch yourself go by;
Think of yourself as "he" instead of "I"—
Note closely, as in other men you note,
The bag-kneed trousers and the seedy coat.
Pick flaws; find fault; forget the man is you,
And strive to make your estimate ring true.
Confront yourself and look you in the eye—
Just stand aside and watch yourself go by.

Interpret all your motives just as though
You looked at one whose aims you did not know.
Let undisguised contempt surge through you when
You see you shirk, O commonest of men!
Despise your cowardice; condemn what'er
You note a falseness in you anywhere,
Defend not one defect that shames your eye—
Just stand aside and watch yourself go by.

And then, with eyes unveiled to what you loathe—
To sins that with sweet charity you'd clothe—
Back to your self-walled tenement you'll go
With tolerance for all who dwell below.
The faults of others than will dwarf and shrink,
Love's chain grew stronger by one mighty link—
When you, with "he" as substitute for "I"
Have stood aside and watched yourself go by.

S. W. GILLIAN, in *Success Magazine*.

GRAPHITE AS A CYLINDER LUBRICANT.

A good cylinder lubricant, which is coming into general use, is graphite. It is a mineral substance and gives an exceedingly smooth surface to the interior of the cylinder. Its principal objection has been the difficulty of feeding it into the cylinder. This difficulty has now been overcome by mixing the graphite with oils. Two oils are used of about the same specific gravity, but of such a nature that they will not mix together. The graphite is then mixed with one of the oils very thoroughly, after which the mixture is added to the other oil and the distribution of the graphite is complete throughout the mixture. It has been found that this compound feeds well without clogging the lubricator, while the graphite will not settle and is always held in suspension. It has been this discovery that has caused graphite to be extensively used as a cylinder lubricant.—*Practical Engineer*.

FUNNY THING ABOUT JERSEY.

The policeman who usually guards the Broadway and Dey Street corner, but who is now off on sick leave as a result of trying to stop a runaway horse, was in a reminiscent mood.

"All sorts of people pass the corner," he said. "One day I missed a German porter who was in the habit of stopping to speak to me every day. A few days later he reappeared, and I asked him where he had been.

"'Over in Jersey,' he replied.

"'What part of Jersey?' I asked.

"'I don't know,' replied the German. 'Funny thing 'bout them towns over in Jersey. They all have different names.'"

—*New York Globe.*

MASTER KEY To GOOD LUBRICATION

**DIXON'S
FLAKE GRAPHITE**
acts on a "positive principle." It is not content to merely separate friction surfaces, it attaches itself directly to them, fills up the minute irregularities and provides a graphite coating that decreases friction, takes the wear, and makes metal-to-metal contact impossible. Added to oil or grease, Dixon's Graphite improves lubrication, increases the durability of the lubricant, and reduces the quantity necessary.

**Joseph Dixon
Crucible Company**
JERSEY CITY, N. J.

Even the most carefully finished metal surfaces when examined under the microscope will be found to be rough—something on the order of a nutmeg grater.

That's why oil or grease is used to keep apart the friction surfaces. But under the excessive strain of working conditions the oil or grease film is pierced and the metal surfaces dig into each other. Then friction becomes excessive, wear occurs, power is wasted,—this is the first step toward ruined bearings and scored cylinders.



Graphite

Vol. X.

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No. 9.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

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WHAT TEACHERS AND EDUCATION HAVE DONE

The following is from the opening address delivered by Mr. J. B. Clark at the County Institute, and reported by the Owensboro, Ky., *Daily Messenger*.

He spoke of the better qualifying of themselves for one of the grandest and noblest of all works,—education. "The minister has the highest avocation, that of calling souls. The lawyer is supposed to enable us to protect and defend our lives, liberty and property, and to enjoy freedom and the goods of this world, while the physician's calling is that of keeping our minds sound in sound bodies without which every effort toward happiness in this life would be futile and vain.

It is the school teacher, however, that trains them all. It is the school teacher who first points out the way over the

rugged path that leads all great men to their goals: it was the humble school teacher who forged the mainspring of action, which moved the world out of the darkness of the Middle Ages into the light of the nineteenth century. It was education that formed and fashioned from wandering savages and roving bands of ignorant barbarians the great fabrics of our present forms of government, and developed the high standard of today's civilization.

All mankind has a common ancestry. What, then, has made the great contrast between a cannibal of Borneo and a Victoria, a Gladstone or a Leo? Education, and education only. Education has opened up to us the great book of nature, wherein we read with rapture the sublime works of God. Education has taught us to know our origin and our destiny, and to understand our duties to ourselves, to our neighbors and our Creator. Education has bridged the oceans, and made communication almost instantaneous, and all things that transpire today we may read of before breakfast tomorrow.

The press is a teacher, and it is one of the mightiest factors for education. The greatest accusation against the press is that it tells us of our deeds, for which it is called sensational. It is also accused of being unreliable, but we have always observed that those who do wrong fear the unreliability of newspapers, and that, in our opinion, is a great bridle to crime.

Education performed a greater miracle for our navy than

is related of Joshua of old, for at Manila and Santiago Dewey and Schley did not have to call on the sun to go on night duty for them; education had taught them to accomplish their task during working hours. It was education, not numbers, that rendered unequal the opposing armies of the United States and Spain.

Many theories of education have been advanced, and its science is far ahead of its art, but perhaps the very best system, so far, is to be found in Germany, where a child of the humblest peasant may, by its own efforts and perseverance, receive the highest training the land affords. Next to that in excellence comes our own. Our school laws leave the child's welfare, to a great extent, to local interest, thereby recognizing the great principle of self-government—home rule.

Under the existing law each school district may levy upon itself a special tax for the purpose of extending the school term and increasing the salary of the teacher.

BRITAIN TO GAIN AN HOUR

By the Same Method that Dixon Gained a Half-hour. Committee of Commons Favors Scheme to Push Clock Ahead

"The Daylight bill," says the *New York Times*, is a measure by which the United Kingdom is to be lured into starting the day's work one hour ahead of the time indicated by the sun, has received the unqualified blessing of the select committee of the House of Commons, and all indications now point to its becoming effective next April. The bill proposes to advance the clock one hour in April in order to promote greater use of daylight and to give the masses one hour more playtime by light of day.

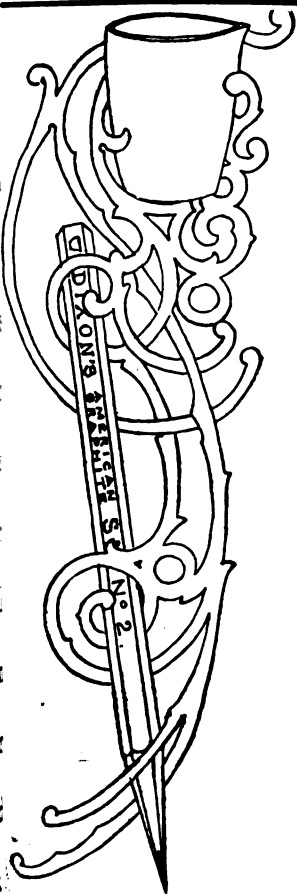
For a number of years the Joseph Dixon Crucible Company at its graphite mines at Ticonderoga, New York, has had its clock set ahead one-half hour that its workmen may have more daylight for work in their gardens.

FOR A bit of bright, snappy, original writing read "Conventicn Thoughts" by Sam Mayer in this issue of GRAPHITE.

One good judge of writing in the Dixon office, when he read "copy", said, "That's the most original and cleverest bit of writing that's been in GRAPHITE since the days of Mr. Walker."

HATE means a hot-box and sand in the bearings, while love lubricates the affairs of life.—ELBERT HUBBARD.

Now let the wag propound, "Why is love like Dixon's Flake Graphite?"



ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

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LIQUID STOVE POLISH KILLS WOMAN

Another tragedy has disgraced the annals of the liquid stove polish business. On April 17, Mrs. Rosie Pusklin, 238 West Forty-seventh Street, Chicago, while blacking a stove with "E-Z" liquid stove polish, was fatally burned when the gas arising from the benzine in the liquid became ignited. Reports state that the bottle or can exploded. At any rate, the lady died from her injuries, leaving a bereaved family to mourn her loss. The coroner's jury brought in a verdict stating in terms that Mrs. Pusklin died from injuries sustained while using "E-Z" stove polish, as a result of the ignition of the compound of which it is made. What a commentary upon the greed for money that puts into the hands of the innocent, the careless, perhaps the ignorant, as a common household necessity, the means of taking life in the most horrible way and perhaps of starting a conflagration that might involve a whole city! The Chicago fire of 1871 was started from less cause.—*Retailers' Journal*.



AS SO MANY readers of GRAPHITE will recognize in the above cut the genial face of Mr. John M. Ready, manager of the New York Branch of the Joseph Dixon Crucible Company, there is no special need of putting a name under the picture.

Mr. Ready, before settling down in New York City as manager of the Dixon office, traveled through every state of the Union, and even down in Mexico, and if you were to bag him up some dark night and carry him over the country and drop him down in any city, he would find his way to the old-time hotel without the slightest difficulty, and without making any inquiry as to locality. In other words, he would know where he was at.

Mr. Ready, however, has never seen the Old World, and therefore arranged to leave New York on August, in company with his mother and sister for a trip abroad.

Not having the gift of gab possessed by some of the other Dixon representatives, his first move after reaching terra firma on the other side was an excursion to Blarney Castle. If it is true that one has to be lowered from the top down to the Blarney Stone in order to kiss it, we need not wonder that Mr. Ready found it necessary to go up to Scotland for the wherewithal to steady his nerves.

From Scotland he returned to England, visiting the notable places, and as GRAPHITE is issued he is seeing the sights of London town.

Thence he will go over to France, spending three days in Paris seeing all of the sights there that his mother and sister will permit him to see. Thence to New York, where he is due to arrive on September 6.

CONVENTION OF MASTER CAR AND LOCOMOTIVE PAINTERS

We have received announcement of the 39th convention of the Master Car and Locomotive Painters Association, to be held at Atlantic City, September 8 to 11. Headquarters will be at Hotel Rudolf, the sessions being held in the convention hall of the hotel.

This association deserves much credit for the good work it has accomplished in devising economic methods and testing materials used by railroads for the painting of cars and locomotives. Many interesting and vital topics are announced for discussion at the coming convention.

"SALVATION is not behind us."

PREVENTING CORROSION OF STEAM MACHINERY

By W. H. WAKEMAN

Chapter V

This chapter contains examples from actual practice, where steam machinery has been neglected until much damage resulted, proving unsatisfactory to owners so far as they are acquainted with the actual state of affairs, and demoralizing to the engineers in charge of the plants. This view of the matter calls attention to the fact that an engineer frequently knows more about what may be called the internal workings and condition of his plant, than his employers, and if he is thorough in his work and conscientious in his dealings, the plant is safe in his care, but if he is careless about the former, and unreliable in the latter, there is a chance for much harm to be done before his employers are fully aware of it.

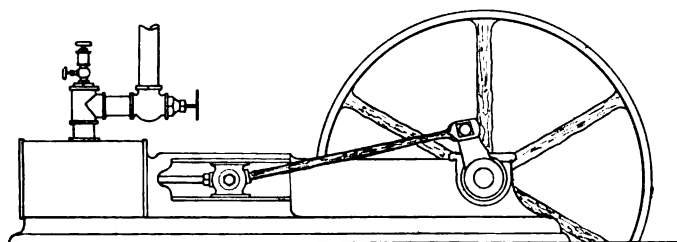


FIG 21

Fig. 21 illustrates an engine that is located in a large plant, where several engines of various sizes are required to operate different machines. This plant has been shut down for several weeks owing to the unsatisfactory state of business, and although this condition of affairs affords an excellent opportunity to make much needed repairs, nothing is done about it, but on the contrary no measures are taken to protect the engines and other machinery from corrosion due to a very poor roof that lets water drip down in many places, falling directly on the machines in some cases, and indirectly causing the whole place to be damp and disagreeable.

Every part of this engine is covered with accumulated grease and dirt mixed and baked together until some of the parts seem to be nearly twice as large as they really are. Of course, this coating prevents the parts that were formerly bright from rusting, but the guides, piston and cylinder which are kept bright by the friction due to motion, begin to rust and corrode as soon as motion ceases, hence some action ought to be taken to prevent it, even if it was only to give them a coating of oil, but this is apparently not thought of, for it is never done. When the time comes for shutting down this plant the throttle valve of each engine is closed and the revolving and sliding parts are allowed to stand just where they stopped, until wanted again.

This engine has an angle throttle valve as shown, followed towards the cylinder by a horizontal nipple, then a tee and another nipple. It is a very easy job in such a case to shut the throttle valve, open the lubricator (which is so called through courtesy, but is unworthy of the name), pour in a mixture of Dixon's Flake Graphite and cylinder oil, start up and run a few minutes, then shut down and pour in another dose. If this is repeated about four times it will give the inner

surfaces a coating that will prevent the greater portion of them from rust, although it is much better to take off the cylinder head and make a thorough job of it as explained in previous chapters.

The point that I wish to make in this connection is that this could be done by the engineer in charge, at an insignificant expense for material, and practically nothing for time. When I saw this piston rod about one-half of it was exposed to view and it was red with rust. How much better it would be to give this important part a coating of the above mentioned mixture with the crosshead as far away from the cylinder as possible, then by moving it to the other end of its stroke, thus bringing the rod inside of the cylinder, it would be protected from injury in case of fire, and nearly the whole of it kept free from rust.

A photograph of the surroundings of this engine while in regular service would be interesting and instructive as illustrating a horrible example of conditions that ought to be avoided. Old material that is used in that plant is piled near the fly wheel until there is not room enough to walk around it, and there is only a path reserved for the engineer to reach the throttle valve when he wants to start or stop that portion of the machinery. Why this was ever brought in from the yard and piled around this engine is a conundrum, and why it is not used the first day that the mill is in operation is a problem that nobody can solve. Some employers claim that the external surroundings of an engine have no bearing on its internal condition, but I have never found one that was located in a dilapidated building, in a room that was filthy and unkempt, with its outward parts covered with dirt that had accumulated for years, that was in good condition on the inside.

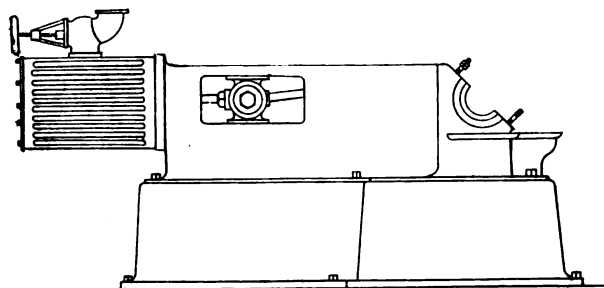


FIG 22

Fig. 22 illustrates the frame of a high speed engine that was put out of commission because changes were made in the plant whereby it was no longer required. The caps were removed from the main bearings and the crank shaft taken out as shown in Fig. 23. This is a well made engine, that looked bright and attractive in service, but when it was shut down and removed from its foundation, nothing was done to prevent rust from spoiling it. The cylinder head, jacket, steam chest cover and throttle valve had been painted black at some previous time, in order to save the labor required to keep them clean, and although some parts of the shaft governor were nickel plated, all looked alike owing to the thorough application of paint.

This preserved the parts mentioned from rusting, and when it was removed later on, the bright and attractive appearance was restored. The packing was left in the throttle valve

stuffing box and it had become so hard that a cold chisel was required to cut it out. The packing that formerly kept steam from leaking around the piston rod and the valve stem was still in place, although more than a year had elapsed since the engine was shut down for the last time in that plant.

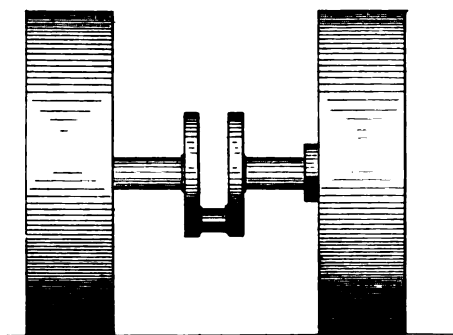


FIG 23

I am willing to admit that in this particular case no damage had resulted from lack of care in laying up this engine, but this was due to the fact that it was stored in a dry place, as neither rain nor dampness could reach it. Otherwise it undoubtedly would have been badly corroded and damaged. For illustration suppose that the crank pin and the shaft on each side of it, where it rests in the main bearings (see Fig. 23) were corroded until the surfaces were rough and pitted.

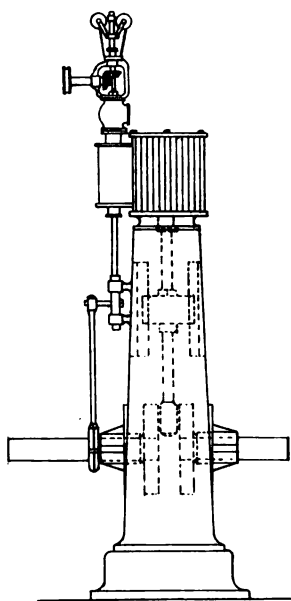


FIG 24

In this case it would be necessary to remove both fly wheels from the crank shaft (unless a very large lathe was available), turn the bearing surfaces down until they were smooth, and re-babbitt the bearings. A special device is used for turning the crank pin true, and this means that it is an expensive job. The brasses would not fit the smaller pin, hence more expense would have resulted. Surely an ounce of prevention is worth a pound of cure in such cases.

Fig. 24 illustrates a vertical engine that was shut down, taken out and stored, and no precautions were taken to preserve it. The crank shaft, connecting rod, crosshead, guides, and piston rod were soon in a damaged condition, as they turned red with rust and corrosion. An expenditure of about

\$1.25 for "stock and time" would have preserved this machine perfectly, but no attention was paid to this matter, hence it will cost much more to take out the parts and refinish them, making them salable and in proper condition to use.

The difference between this engine and the horizontal one illustrated in Figs. 22 and 23 is that this was stored in the upper story of a building in which a laundry was located, hence the air was frequently heavy with moisture, and this made the iron parts rust quickly.

Fig. 25 illustrates two vertical enclosed engines, each of which is directly connected to an electric generator. The right hand part is a side view showing the small fly wheel made without spokes, which revolves at a high rate in regular service. The left hand part is a front view of another engine of the same kind, and taken together they show two engines just as they stand in the yard. There are three of them, but it is not necessary to show the third. They were used in a power house until no longer economical and reliable under conditions that existed in that place. They were then put out in the yard and left as shown without any protection whatever from the weather, and no effort was made to preserve them from corrosion by the use of oil, graphite or paint.

A small building was erected over each generator as shown at the left hand, and made practically rainproof, but this was not necessary if we are to judge by reports from places where generators and motors have been submerged for months, and when the water subsided they were taken out uninjured. Do not lose sight of the fact however, that there is a difference between standing completely submerged, and being exposed to the weather, for in the latter case a machine is wet and then allowed to dry, which facilitates corrosion.

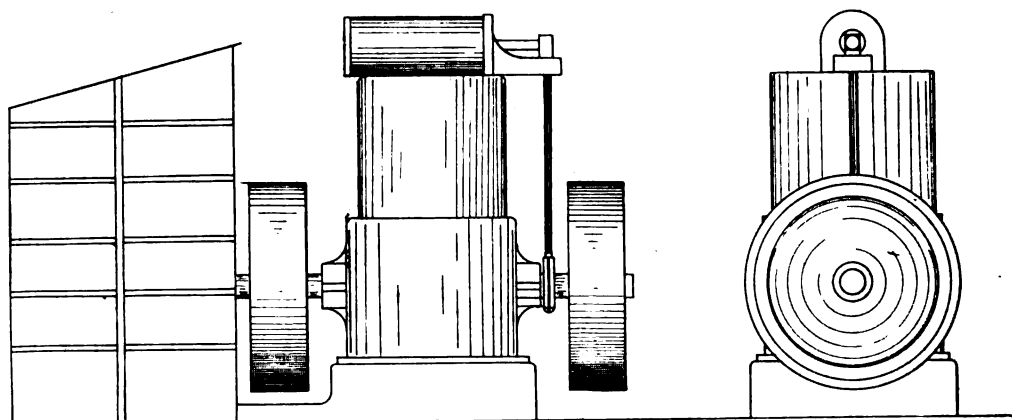


FIG 25

Personally I do not prefer this kind of an engine, but that does not make it seem right to neglect property and cause waste, because those engines might prove satisfactory in another plant and under more favorable conditions.

One gallon of silica-graphite paint costs \$1.50 and a painter could easily paint those engines in one-half day, for which an equal amount of money would be paid, therefore the total cost of preserving them would be \$1.00 each, and if they stand there five years (which seems possible at the present time), without paint they will be worth their weight in pounds multiplied by the price of old iron, but if given a coat of paint which can be cleaned off when necessary, they will probably bring a much higher price.

These engines were used ten years or more, hence if they depreciated ten per cent. each year, and this was properly charged against them, they are legally out of existence so far as the records of the corporation which owns them are concerned, but at the same time they are still in evidence when a view of that yard is taken, and they will be sold at some future time. The above mentioned coat of paint will certainly increase their value one cent per pound, therefore it will be a good investment.

So far as preserving their internal parts is concerned, a few pounds of Dixon's Heavy Machine Graphite Grease properly applied will answer every purpose. The cost of this is nominal and a man could apply it in one day.

(To be Continued.)

**MR. GEORGE T. SMITH MADE DIRECTOR
NATIONAL ASSOCIATION OF STATIONERS
AND MANUFACTURERS**



At the recent convention held in Boston Mr. Geo. T. Smith, Vice President of the Joseph Dixon Crucible Company, was elected Director of the National Association of Stationers and Manufacturers.

CONVENTION THOUGHTS

CHICAGO, August 4th, 1908.

The convention of the Stationers and Manufacturers of the United States of America, which was held in Boston this year, is over and it has left a good taste in the mouth.

Conventions are good things.

They bring together the friends of other days.

They make the cold man warm up.

They refute the opinions of some that all their competitors are rascals.

They prove that sentiment has a place in the business world.

They take a man's mind away from the humdrum of every day life.

He laughs and to laugh is good.

Is there anything more exhilarating than to see two old friends from different parts of the country meet for the first time after the lapse of years? The words are few—just "Hello, Bill," and the warm clasp of the hand.

All this association does.

We make up our minds that the man we have heard maligned is not such a bad fellow after all.

He has been misunderstood.

He may be a man of retiring disposition, fearful that the other fellow will take offence should he warm up.

Association is a bully thing.

Dixon had five representatives in Boston.

Vice President George T. Smith was voted a good fellow, democratic and easy to get acquainted with.

Conventions are great.

They teach people to become good mixers.

George T. Smith is a good mixer.

John Ready, manager of the Dixon New York store, was as smiling and as happy as a cherub. He says fried lobster is immense, and John knows. Ask one of the tribe of Shanley. Erin go bragh.



"Billy" Coane, of the Philadelphia branch, and his charming wife would have been missed had they not been there.

Dixon's Boston representative, H. A. Nealley—gentle "Harry"—was here, there and everywhere, clothed in his modest and unassuming gentility.

Bostonians are great—so is Boston.

Who but loves its crooked streets?

What they did for the ladies was aplenty.

The ladies were there eighty strong. God bless them! From sweet Dorothy Gibbs, the pet of the convention, to whom the world is a toy, to the dear old lady whose name I have forgotten but who, once like Dorothy, is now living in the gray of the dying day.

The ride on the boat, who can forget it—the well gowned women and the music and Harrigan—"H-A-double R-I-G-A-N spells Harrigan."

The Boston Association should feel proud of itself.

Rah for Boston!

We had a bully time.

Conventions are great.

—SAM MAYER.

PROLONGING THE LIFE OF CRUCIBLES

By DUDLEY A. JOHNSON

Part I

On the one hand, the crucible maker works along the same lines as the manufacturing chemist or the druggist—that is, everything is analyzed, weighed and measured. He is not infallible and consequently makes mistakes.

On the other hand, crucible making is somewhat like bread making. Even if you have the proper formula, it does not follow that you will make good crucibles. A good method is for the crucible maker to keep a record of each batch of crucibles, say 500 pots made in one batch, at one time, by one man, precisely uniform in every respect, and these are sent out to 20 different customers. If 19 say: "Fine! send me some more of the same," and one man says "No good," we must conclude that the fault is in that man's shop. When complaints are received from practically every customer who gets a certain batch—the crucible maker knows he has made a mistake. The perfect system under which he works, and the long years of practice in repeating the same operation, reduce the chances of mistakes in his shop to a minimum. They are as 1 to 20 compared with causes of mistakes at the user's end of the line.

Too many brass foundries follow in the old ruts; they let their tongs and shanks get out of shape and don't notice any bad results; they leave their fuel out in the rain and don't think it makes any difference; they throw heavy ingots into the pot and jab it with an iron poker and the crucible seems to stand it all right. Gradually one bad practice after another creeps in, with the result that a complaint is made to the crucible maker that his pots are not as good as they used to be. The customer will say: "I can remember when we used to get 40 heats out of your pots and we can't get half that number now." It reminds one of the oldest inhabitant recalling the terrible winter we had back in the 60's.

IMPROVEMENT IN CRUCIBLE MANUFACTURE

Right here I want to say that the records will show that better crucibles are being made today than ever before in history. At first it may appear that this is a rash statement—some phenomenal runs are on the old record books—but it must be remembered that in the old days the pots used were much smaller than at the present. Crucibles Nos. 35 and 40 formerly were about the average sizes in use, while today Nos. 60 and 70 are nearer the average. Everybody knows that as the size increases the number of heats decreases. If 38 heats is the average on size 25, only about 30 heats would be expected on size 60, melting the same kind of metal. Another reason is that the mixture placed in the pot consisted almost exclusively of copper, tin, zinc and lead, whereas at the present time the crucibles are charged with metals that contain percentages of aluminum, manganese, phosphorus, nickel, etc. Various fluxes are also used, and all these things have a detrimental effect on the life of a crucible.

The average length of a heat used to be $2\frac{1}{2}$ hours, whereas today it is not uncommon to get off a heat in $1\frac{1}{2}$ hours, and frequently the metal is poured within 45 minutes after the pot is placed in the fire so that, if the crucible of today runs an even number of heats with one of 25 years ago, it must

necessarily be a better pot to stand up under the more severe strain of a hotter fire to reduce the metal in half the time, and the injurious effects of various new ingredients which go into it. The records show a greater number of heats than in the old days, notwithstanding this severe usage.

METHOD OF PROLONGING THE LIFE OF CRUCIBLES

I am positive that a large percentage of the brass founders can increase the life of their crucibles materially if they will but follow up their shop practice, and in proof of this I want to cite an instance.

Several years ago, one of my friends in the trade happened to mention to me that on a No. 30 crucible his average heats were in the neighborhood of 25, and although he tried several makes of crucibles he did not get any better results; said he had heard other people speak of phenomenal records, but he was inclined to doubt their authenticity.

I told him if he was not getting more than 25 heats out of a No. 30 pot melting this kind of metal, that there was something radically wrong and that by looking over his shop practice perhaps we might see where the trouble was.

We found in the first place that the furnaces which he was using were very wide and very shallow. There were 6 to 8 inches of coke space on each side of the pot with about a 4-inch bottom under the pot. It was a natural draft furnace, and the air coming in from the grate bars below and passing up to the flue hole, carried the hottest part of the fire off to one side of the pot, with the result that the amount of fuel used was twice as much as necessary to melt the charge. I suggested a furnace that was narrower and deeper, allowing about 3 inches of coke space on each side of the crucible and 6 or 8 inches at the bottom. One furnace was built on this plan and the result was so satisfactory that all the rest were rebuilt.

USE OF LARGER CRUCIBLES

I also advocated the use of a larger crucible, as the most economical results are obtained by using the largest crucible that can be conveniently handled, consistent with the kind of castings to be poured. It is obvious that if you are making chandelier work, saddlery hardware, or very light castings of any kind, that a small crucible must be used, because the metal will cool in the pouring, but if heavier castings, such as plumbing work or jobbing work is being poured, a larger crucible will be found more expedient, as all of the metal in the larger pot can be turned into the flasks before it is too cold to run properly, and the expense of melting the larger crucible is very little more than the small one.

CRUCIBLE STORAGE

We then took up the matter of crucible storage. Two rooms were built with solid brick walls with gratings in the bottom and flues at the top, arranged so as to pass all the waste heat from the furnaces through these rooms on the way to the stack. One room was used for burning cores, the other was used for crucible storage, and dampers were placed so that the heat could be diverted into either of the two rooms as needed. This kept the crucible constantly at a high temperature and enough pots were always on hand so that they could be thoroughly seasoned before it was necessary to put them into use.

An improvement was noted in the life of the crucible, and we then turned our attention to the fit of the tongs. We had new tongs made of the grab pattern, an overhead trolley was used, and the pots were lifted out without any squeezing. Two pairs of tongs were used, one for the crucible when it was new, and another after it was partly worn out and had grown smaller. The shanks were overhauled and the clips discarded.

RECORDS OF HEATS

The keeping of an accurate record of the heats was next in order and also a record of the different furnace tenders, and it was found that some furnace tenders would require 25 per cent. more crucibles and use 25 per cent. more fuel in the same work than the man alongside. In order to discover whether the drafts of the furnaces or local conditions had anything to do with this difference, the furnace tenders were switched about, and ultimately it was proved that certain furnace tenders would constantly get at least 25 per cent. better results than others from the same furnaces and under the same conditions. These men were gradually weeded out.

To sum up, we would say that at the last report this man has had a general average of 45 heats on a No. 50 pot over a period of nearly a year and a half, as against his old record of 25 heats on a No. 30 pot. We have not the figures on the fuel consumption, but are satisfied that he is using no more fuel with the larger crucible and under improved conditions than he was before.

I might give a number of other instances, but one will suffice. What has been done in one brass shop can readily be accomplished in another. I have here a list of the causes of the failures of crucibles, and I will briefly point them out.

(Continued in October.)

AN OLD-FASHIONED SPELLING BEE

Some of us are old enough to remember what are sometimes called: "The good old days," when we were considerably younger than we now are; days when we went to The Little Red School House, and among the pleasantest recollections are those at the close of the term when the School Committee made their periodical visit, and as many of the parents as could leave their work also attended, and the exercises were concluded with a "spelling match" in which sides were chosen by a captain on either side, and whenever a word was misspelled, the pupil so misspelling was dropped out, the victor remaining until the last.

At the annual meeting of school teachers of this country, the first week of July, held in Cleveland, Ohio, an attempt was made to regain the interest in this form of a contest, and notifications were sent out to the various cities asking if they wished to enter the contest; four cities replied, namely, Cleveland, Pittsburg, Erie and New Orleans, each city sending a team of fifteen spellers. A Committee of Judges was appointed to see that everything went along smoothly, and a prominent educator was elected to pronounce the words. The children were seated at desks on the platform of the Hippodrome in Cleveland in the presence of about 4,000 teachers, including three of the Dixon representatives. A hundred words were given, mainly of two or three syllables, all common words; that is, words of everyday use, and not obsolete or pe-

culiar words, what are known as catch words; following are a few of the words given: Separate, embarrassed, privilege, origin, analyzed, similar, mischievous, conscience and convenience.

Fifteen seconds was the time allowed the children for each word. The gentleman who pronounced the words particularly requested the audience not to convey any information as to the meaning of the words or as to the way they were spelled, to the children. Each child in this contest was numbered, and that number placed on their paper. A Committee of ten superintendents and teachers was appointed to correct the papers after they were handed in, and not one of these people knew the name of any child, or the city to which they belonged, until after the papers were corrected.

The second test was spelling orally; the children were given four words each. A Committee of four teachers was appointed to note the way in which these words were spelled, whether correctly or incorrectly, and an accurate record was kept in this way of each child's work, and the total being the team work of that respective city. At the conclusion the returns were carefully scrutinized, and the award of the judges was decided in favor of Cleveland, that team having made only forty-one mistakes.

A great deal of interest was shown by the visiting teachers in regard to this contest, and this idea will doubtless be followed at similar meetings in many parts of the country.



SAM DOUGHERTY

Big, handsome, genial Sam Dougherty, manager of the St. Louis branch of the Joseph Dixon Crucible Company, is now a member of the Order of Benedictis.

GRAPHITE, all the members of the Dixon Company both great and small, married and single, old and young, join in hearty wishes that he may live to celebrate, as the President of the Dixon Company has already done, a joyous Golden Wedding surrounded with children and grandchildren and all that goes to make life worth the living.

ACCORDING to the *New York Times*, the city chemist of Omaha testified in the Federal Court that the citizens of Omaha drink thirty-one tons of mud daily.

A glass of Missouri River water cannot be seen through until after settling for half an hour.

THE TRAVELING FRATERNITY

An Important Factor of Modern Salesmanship is Modesty—The Place of Friendship—Few of the Old Boys Left

By SAM MAYER

of the Joseph Dixon Crucible Company

Were I not one of them I would take off my hat to the traveling fraternity, but modesty forbids. However, joking aside, the first essential of good salesmanship is modesty. I can hear a loud laugh go up all over the land, but it is so—the modest man wins out in the long run. He is the man who makes substantial friends in the trade and makes his position permanent, and after all is not this what we are all aiming at?

The loud-mouthed salesman belongs to the dark ages. He had his day, but he is no more. The modest salesman has taken his place, and I think is here for keeps.

For years I came in contact with a certain salesman, and each time he showed me his order book, whether it was in St. Paul or San Francisco or Galveston or Boston or Halifax, it was always the same kind of an order and the amount was always \$1,700. This got to be a joke. He showed it to the prospective customer whom he met for the first time, and he showed it to his old friends, and to everybody this man was a joke. The modest man keeps his business to himself, and I think that he can rightly be called the flower of the traveling fraternity.

First, he makes business friends and then these business friends in time become personal friends. The buyer is glad to see him come into the store because he knows he will not be bothered with a whole lot of talk and tales of the amount of goods he just sold the other fellow. The average buyer is "delighted" (?) always when a traveling man tells him what a big bill of goods he just sold his next door competitor.

My observations go to show that the traveler has kept up with the times. Of course, traveling, to use a slang phrase, is a cinch compared with what it was in the old days when the Pullman sleeping cars were few and far between and the dining car a dream; when one or two passenger trains a day were the average between most of the towns west and south of the Ohio River and when, in order to make time, the traveler was obliged to ride in the caboose of a freight train and usually at night, and when you take into consideration that these freight trains made on an average of ten miles an hour, you can figure how much time the traveler put in riding in this way and how pleasant it must have been. Sometimes in order to go one hundred miles meant traveling from eight o'clock in the evening until four or five or six the next morning. There were no seats in these cabooses, just an ordinary ten or twelve-inch bench along each side of the car.

In those days it was five and ten minutes, and never more than twenty minutes, for meals at the way stations, and when the train was late it meant no breakfast, or no dinner, or no supper, as the case might be.

The new crop of the traveling fraternity, those of the last generation in our line, are what I call one hundred per cent. boys, and they have kept up with the times, and they have been progressive times. The traveling man of today stands for the best thought of the times, and he who does not under-

stand his business thoroughly stands very little chance of advancing; he is continually up against bright men and a better system than formerly prevailed. I refer now to the buying of goods. With the progress of the country the buyer has progressed. The old-time buyer was in the habit, as a rule, of buying his goods haphazard; very few kept books on their purchases; they guessed what kind of an order they should place with the traveling man, and it frequently happened that the traveling man with the best gift of gab was the one who sold the biggest bill of goods, but this was not always a good thing. Of what benefit is it to a traveling man to sell a dealer ten gross of an item that he knows in his own heart cannot be disposed of in a reasonable length of time? Is it not much better to sell one gross or two gross and wait for re-orders? Filling a man up and overstocking him is bad business and the progressive traveler will not do this. He cannot expect to make a friend of the man he literally "sticks."

In a measure the traveling man must be both buyer and seller. In showing new goods he must put the articles before the buyer so they can be bought intelligently, so that the proper quantities may be bought. One territory will use one line of goods, another territory another line, and then when a new store opens up you will see how necessary it is that the buyer depends on the salesman for putting in the proper class of goods for that particular territory.

Between the buyer and the seller there must be a mutual confidence. The old-timers had the hard work to do—they were the pioneers. As a rule, they made what could be called between trips, because once or twice a year the buyer, whether he was doing business in New Orleans, San Francisco or Chicago or St. Louis, went to New York to buy. Now it is unusual for a buyer, particularly in the commercial stationary line, to buy except from the traveler. As I said before, the new traveler has a cinch compared with the old-time traveling man.

There are mighty few of the old boys left. Most of them have gone to that other shore from which no traveler returns. Let us offer up a silent prayer that they are sweetly sleeping at the Harbor Bar and when Gabriel blows his horn, may they all awake to join in one mighty chorus of "Auld Lang Syne," while the "Weird Musician of the Sea" touches the bass keys of his mighty organ.—*National Stationer*.

DIXON'S GRAPHITE BRUSHES

Where adapted to conditions, Dixon's Graphite Brushes are absolutely without superior. Because of their unusual lubricating qualities they save wear on commutators and prevent frictional losses.

Write for New Booklet 190-M.

Joseph Dixon Crucible Co. JERSEY CITY, N.J.

RECOMMENDATIONS FOR AUTO CHAIN LUBRICATION FROM WHITNEY MANUFACTURING COMPANY'S CATALOG

The fact that many automobiles prematurely find their way to the second-hand dealer, is in most cases due to excessive wear and improper lubrication.

One of the parts which is probably most neglected is the chain, and we are reproducing the following from a catalog of the Whitney Mfg. Co., Hartford, Conn., under the headings: "Why Chains for Motor Cars Are Not Guaranteed," "Care of the Chain."

"Many of our chains have been allowed to run for an entire season, or until actually worn out, without inspection, lubrication or any attention whatever and without being removed from the sprockets. If the best results are desired, chains should be cleaned, inspected, repaired if necessary, and lubricated, a number of times each year. By repairing, we mean that parts should be taken out of the chain and new ones inserted wherever it is found that a bushing or rivet has become loose in a side plate or where one or a few rivets or bushings are badly worn as compared with the other parts. The replacement of one small section may materially increase the life of both chain and sprockets.

"To properly lubricate a chain it should be soaked (after thorough cleaning) for about 30-minutes in hot beef tallow mixed with graphite or some similar heavy lubricant, but many users have simply applied oil to the outside surfaces which amounts to practically nothing and which helps to collect dirt and sand and thereby grind off the sprocket teeth."

The Joseph Dixon Crucible Company, since the bicycle industry was in its infancy, have recommended for chain lubrication that the chain should be thoroughly cleaned and dipped into a molten solution of their motor chain compound. In this manner the grease and graphite get to all parts of the chain, thus insuring perfect lubrication. If it is not convenient to remove the chain, some of our motor graphite dusted on the chain by means of a "bug gun" or rubbed on the chain with a cloth, will help conditions very much.

THE UNKNOWN PALISADES

Everyone living in the neighborhood of New York should read the article under the above heading published in *Harper's Monthly Magazine*, July number. The writer says:

"The edge of the world, if such a thing may be, lies hardly a rifle-shot away from one of the centres of the world itself—the city of New York."****

"In no place other than this near proximity to man and one of his greatest cities could a physical feature so profoundly vast and impressive be so hidden from the world. Their counterpart cannot be found in all the world; and yet the Palisades are almost unexploited and unknown to the globe-circling, sight-hunting public that yearly traverses the continents or seas to gaze at things less wonderful in some distant field of Nature's marvelous achievements."****

"To the visitor who comes upon them for the first time, from the rear, these walls present in some aspects a panorama of immensity wholly unexpected. The edge of the world—I repeat the phrase—is the fit description, for this brink seems

nothing less. It is lifted in places almost sheer in the air to a height of half a thousand feet. Below, at its base, the Hudson River moves in unhurried majesty, its tide nearly a mile in width. Across lies the low, crowded island of Manhattan, utterly insignificant in elevation as viewed from this lofty place of vantage."****

"Again, the Palisades resemble a dry Niagara. The real Niagara, stripped of its flood, would be but a miniature of this. Here is not only a greater drop and scores of horseshoe bends and massive promontories of the rock, but miles succeeding miles of the sheer descent over which all the rivers of the earth combined could pour in a world-engulfing torrent. There is nothing else like them in the prospected round of the sphere. In no other place in all the world can the daring adventurer walk so many miles at the very scarp of a precipice."****

The entire article is very interesting and well worth most careful reading, the fine illustrations adding greatly to the interest.

THE FIRST CHAPTER.

President Roosevelt will get a Dollar a Word.

We saw (two plunks) a buck (that's four)
And then (six dollars, please)
I fired (that's eight) a shot (two more)
And brought him to his knees.
The hunting scene (that makes nineteen)
Is something really fine;
The jungle's all a vivid green,
(I think that's twenty-nine.)

To-night we lie beneath the sky,
(One, two, three, four, five, six;)
It's great, (seven, eight;) the moon is high,
The woods full of big sticks!
So what we do (that's twenty-two)
Let's do with all our might.
(Come, Kermit, count, whate'er you do!
Yes, twenty-eight is right!)

It is great sport, (my words are short,
But why should I waste ink?)
I thought I heard a rhino snort
In coming down to drink.
I'm on his track; (Kermit, go back
And count these words again.)
The night is still and raven black!
(Loeb, come and hold my pen.)

Bang! Bang! Bang! Bang! (They'll hate to pay
For four bangs in a row,
A dollar each, but that's the way
The contract reads, I know!)
(Loeb, skin the rhino while I add
These words.) What heavenly breeze!
We're off to bed! (And Kermit, lad,
Mail this first chapter, please!)

—J. W. FOLEY.



"BEGINNERS" LEAD PENCILS

The illustration would indicate that the beginner had tackled a lead pencil many times too big for her. As a matter of fact, however, it has been decided by the wise ones in the educational field that a small child can handle a big pencil with less fatigue and with better results than a small pencil.

In other words, while the oldtime cry of educators was for a small diameter pencil for small hands, the cry is now for a pencil larger in diameter than the regular pencil for these same small hands.

Curious as it may appear, the small hand can better grasp and better handle the pencil of large diameter than it can the pencil of small diameter, and with this fact demonstrated, the Dixon Company has added to its latest development in special pencils for schools the Dixon's "Beginners". It is for the youngest pupils and helps them to learn to write. The best authorities in the educational field say it is built on correct principles.

GRAPHITE elsewhere makes mention of the marriage of Mr. Sam Dougherty, manager of the St. Louis branch of the Joseph Dixon Crucible Company, and we feel that all our readers who know Mr. Dougherty will join us in our congratulations.

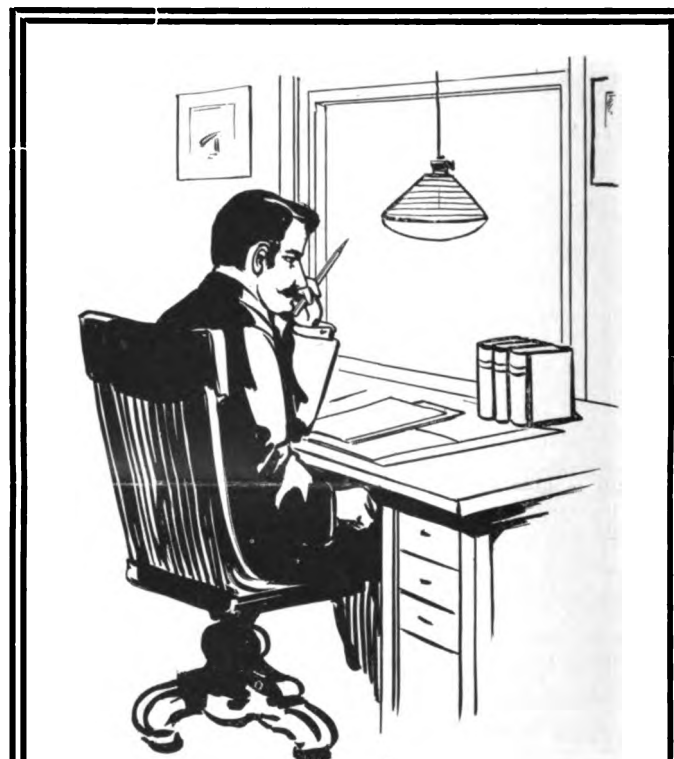
Sam made good use of his vacation by taking unto himself a most worthy helpmeet, and it may be that other settled and steady bachelor managers of the Dixon Company, whose names we will not mention but who are known as "Sam" and "John", of Chicago and New York, will no longer hesitate to go and do likewise.

CORRECTED

He is a small boy struggling with the mysteries of the English language. When his teacher one day gave him the words "horse" and "fast" and told him to construct a sentence containing them, it seemed quite natural that he should write on his paper, "That horse is runnin very fast." The sentence was handed in to the teacher, and, after looking it over, she said: "You forgot the 'g,' Johnny. Please put it in."

John took the paper and went back to his desk. By and by he handed it again to his teacher, and this is what she read:—

"Gee, that horse is runnin very fast."—*Brooklyn Eagle.*



The Business Man Uses Dixon Pencils

The right Dixon Pencil saves time and temper, and these are directly connected with profits. Pencils that sharpen easily, that hold their points, that write smoothly—they're the Dixon kind.

We suggest that you try Dixon's Anglo-Saxon for all around office work; this pencil is giving satisfaction in the business office.

JOSEPH DIXON CRUCIBLE CO.,
JERSEY CITY, N. J.

THE SELLING OF GOODS

To sell goods more cheaply, quickly, directly, in greater volume, and over wider territory, that is the important business problem. Vast improvements have been made in factory processes, and the opportunities for lessened cost of this kind are narrow. But, in improvement of selling-methods, the ground has hardly been broken. This is the most human and responsive third of the business, and at present the third that most needs improvement.

Manufacturers once thought that salesmen could not be made. Now they are beginning to make them. Principles of selling are investigated and reduced to uniform practice and applied to definite classes of goods, always keeping in view, however, the intensely human quality of the act of selling. Once the salesman was self-taught, crafty, and glib. Now he is often a trained logician, and an expert in evidence. The untrained man calls a dozen times while the purchaser is deliberating and hesitating. The trained man calls once, makes certain points strikingly clear, and closes the sale at a higher price than others ask. He covers more territory, gives his house an advantage over competitors, and earns a large salary. Methods of finding the man who needs goods are devised to help salesmen. Goods themselves are made especially with "selling-value" in view. Once a salesman sold entirely by samples that he carried. Now he works from a sales agency, and takes with him only such data as will lead the prospective purchaser to visit a carefully equipped salesroom, where the goods can be more fully shown and explained, and a better quality sold. These are some of the ways in which the selling problem is now tried and solved.

—J. H. C. in *The World's Work*.



The above illustration shows what the Dixon Company makes in the way of a white lumber crayon. The following report, which comes in from an official of a very large railroad company, tells quite as well, if not better, of its usefulness.

"When the rain washes the chalk marks off the cars it causes extra work for the chalkers, and also delay to the engineer while the cars are being re-marked.

"It is our experience that when the marks are put on with Dixon's White Crayon there is no such trouble, as the rain will not wash the marks off the cars put on with this crayon."

In other words, where a waterproof white mark is required on plain surfaces, whether wood or metal, or where a white mark can be readily seen on painted surfaces such as railroad cars, timber, etc., there is nothing to equal Dixon's No. 523 White Lumber Crayon.

ALMOST every one has uses for graphite, some people use it on about every bolt and joint liable to require moving or opening. Keep a cover on the can, for it is surprising how much trouble a little grit can make.

—CHARLES L. WARE in *The Engineer*.

HYMN

By JOHN HAY

A Former Secretary of State who Lived a Christian Life

Lord, from far-severed climes we come
To meet at last in Thee our home.
Thou Who hast been our guide and guard
Be still our hope, our rich reward.

Defend us, Lord, from every ill;
Strengthen our hearts to do Thy will.
In all we plan and all we do
Still keep us to Thy service true.

Oh, let us hear the inspiring word
Which they of old at Horeb heard.
Breathe to our hearts the high command:
"Go onward and possess the land!"

Thou Who art Light, shine on each soul!
Thou Who art Truth, each mind control!
Open our eyes and make us see
The path which leads to heaven and Thee!

LITTLE ACORNS AND TALL OAKS

Fame, under the above caption, says:

"Confidence is a plant of slow growth—particularly *public* confidence. You can't build up a business reputation without proving every stone in the edifice. Even a progressive people like ourselves are rather chary of the 'get-rich-quick' advertisers. We would sooner see that little acorn of commerce grow in a natural way to the 'tall oak' of assured success.

"Somebody once said, 'Where there's haste there's waste,' and it is very true as applied to the building up of a commercial reputation. 'Old man Heinz,' of Pittsburgh, used to peddle his pickles in a wheel-

barrow, and today he is not ashamed of the fact being known, though his millions are almost as numerous now as his pickles were then.

"It is an almost certain rule that wherever you find a solid business you will also find that it has age to recommend it. Merit and advertising for a period of years have effected the success, but the best advertised business was not built up in a few months. The oak is a tree of slow growth, and the acorn must be long planted before it can develop into a mighty tree."

THE intoxicated individual who, after bumping into the same tree thirteen times, bemoaned the fact that he was lost in an impenetrable forest, is no greater disgrace to modern civilization than the hero of this story.

A citizen of Seattle who had looked upon the wine when he was no longer sure what color it was, in the course of his journey home encountered a tree protected by an iron tree-guard. Grasping the bars, he cautiously felt his way around it twice.

"Curse it!" he moaned, sinking to the ground in despair. "Locked in!"—*Everybody's Magazine*.

**German
American
Fire
Insurance
Company
Building,**

**Maiden Lane & Liberty St.
New York City.**

**Hill and Stout,
Architects.**

**Post and McCord,
Steel Contractors.**

**Whitney-Steen Company,
General Contractors.**

**Dixon's
Silica-Graphite
Paint**

**Used for the
Preservation of the
Structural Steel.**



Graphite

VOL. X.

OCTOBER, 1908.

No. 10.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

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WHERE PLUMBAGO CRUCIBLES ARE MADE

The graphite, generally known as "plumbago" or "black lead" crucible, is a familiar object to all who have anything to do with the melting of metals. It is made in sizes from that of a capacity of a man's thumb to one that would easily hold the entire body of a large man.

Graphite is one of the forms of carbon, of which the diamond, charcoal and lamp-black are other well known forms.

Until 1827 "clay pots" were the crucibles used by all who desired to reduce any metal to a molten condition. During the year of 1827 Joseph Dixon, the founder of the Joseph Dixon Crucible Company, gave to the world Dixon's Plumbago Crucible, and in time Dixon's Crucibles became the standard for the melting of all kinds of metals. The

particular value of a plumbago or graphite crucible over other makes lies in the fact that graphite is a most excellent conductor of heat, thereby lessening the time required in melting and the quantity of fuel used, and the ability of a graphite crucible to successfully withstand the great changes in temperature from furnace to pouring and back.

The Dixon Crucible factory at Jersey City, N. J., covers a large area of ground with a frontage of 375 feet. Five years ago the frontage of the crucible factory was 225 feet with a height of four stories. At that time an addition 75 x 115 was added, and now another addition of 75 x 115, five stories in height, has been added. In spite of the great general depression of business the Joseph Dixon Crucible Company are running full time.

THE TRAVELING CIRCUS

As an Example of Efficiency

Whoever thinks of the traveling circus in any other way save that of a show with its rings, and clowns and bare back riders, and its peanuts and pink lemonade on the side, to say nothing of its side shows and other frills?

Now we are told that the organization which reaches the highest known efficiency is a traveling circus.

Harrington Emerson, engineer, has had many years' experience on some of the largest railroad systems of the country and has specialized in the production of the greatest efficiency

in men and material. He has been engaged to give a course of lectures next Fall in the engineering department of Columbia University on this very subject.

It is Mr. Emerson who points out to us the traveling circus as a standard of efficiency. He says:

"It has been discovered that to drive in tent pegs in the shortest possible time five men should work in a gang. If four go around together there is an interval when the peg is not being struck by a sledge. If six men are employed one will have to wait a few seconds to get in his blow. But if five form the gang a regular rhythm can be kept up and the sledge of the man who has struck has just time to slide from the peg before the next descends. It is this marvelous organization which has caused military authorities before now to send their transport officers to study the organization of the circus."

To have better known costs, to have better understood the efficiency of men and tools, to have had a better system of selling and of expense accounts, in other words a better organization from A to Z, would have meant the salvation of many a concern now defunct, and a surplus account to some concerns struggling to exist.

GETTING RID OF THE POUNDING

From D. S. Taylor, California.—Replying to a query from George Denio, New York, in the June number, about the pounding in his model M Cadillac, will say that I had the same trouble. I found no loose bearings or carbonized cylinder, and the engine was timed perfect, so I made the time slower by two cogs of the time gear and overcame all the pounding, and am getting fine results. Imperfect lubrication of the cylinder will cause pounding, as the oiling device is located on one side of the cylinder, and the left side of the cylinder, when the engine gets hot under the load, will get partially dry. By putting a tablespoonful of graphite, mixed with a pint of heavy oil, in the crank case before every long trip, all sticking will be overcome.

—Automobile Dealer and Repairer.

A TEACHER in an East End school found great difficulty in getting any answers from an eleven-year-old member of the class.

"How is it," he asked, "that you never know your lessons? When I was your age I could answer any questions put to me," added the teacher.

"Yes," replied the urchin, "but you had a different teacher to what I have."—*Tattler*.

ESTABLISHED 1827



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

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Vice Pres.—GEORGE T. SMITH,
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BALTIMORE OFFICE, 1005 Union Trust Building.

FACTORS AFFECTING LUBRICATION

Under the above heading *The Horseless Age* for May 27, 1908, prints a very interesting article covering several columns. Commenting on solid lubricants it said: "Graphite is coming into more general use every day, and undoubtedly it is of much value where it can be readily applied. It has been tried in steam engine cylinders with great success. On plane surfaces running under heavy pressures and at slow speeds, graphite is superior to oil."

THE OXALIC ACID HOAX

The letter signed "Engineer" in *The Times* yesterday gave a perfectly comprehensible and lucid explanation of the saving in coal effected by school janitors last winter, who solemnly treated their burned-out cinders with doses of oxalic acid, salt and water, in obedience to the order of the Committee on School Supplies of the Board of Education. The ridiculous fallacy of this practice has been proved by good authority.

But the janitors, taking advantage of every mildness in the winter, and by careful stoking where they once used coal wastefully, did succeed in saving, according to Committeeman Frank D. Wilsey, of Kingsbridge, "from 10 to 70 per cent. of fuel in the school buildings." Knowing the "crotchet" of the committee, who warned them that they must show results with the oxalic-acid solution, for fear of losing their jobs they have not dared to betray the real cause of the accrued saving.

If Chairman N. J. Barrett wishes himself and his colleagues on the committee to be freed of a terrible suspicion that they do not exactly adorn a board of education, he had better procure, and as the Prayer Book saith, read, mark, learn, and inwardly digest, the published findings of Professors Stillman and Gill, of the Stevens and Massachusetts Institutes of Technology, and Professor Pellew, of Columbia University, concerning the efficacy of oxalic acid mixed with burned-coal ashes. Then they may procure, with clarity of mind and conscience, the dismissal next winter of those janitors who shall fall below this year's record in coal saving without any adventitious and superstitious aid from their acid prescription.

—*New York Times.*

SINKING FLOAT CURED WITH GRAPHITE COATING

EDITOR *The Practical Engineer*:

In float or "pot" steam traps in which the discharge is operated by a hollow float made of metal, the partial filling and sinking of the float sometimes occurs. In such cases the trap is put out of commission, the seriousness of which depends on circumstances, which may, under certain conditions, be of considerable importance. In many of these cases it seems certain that the water penetrates through the pores of the metal, which are too small to call leaks, in the ordinary meaning of that word.

In one particular case, a trap of this type was draining coils in which the pressure was held regularly at five pounds by a reducing valve. The float in this trap would sink with tolerable regularity about every three weeks, so it occurred to me that some kind of a coat of paint might do some good, if it was of such character that would stand the temperature and the effect of water.

The trap was used through the sugar season, which lasted only about three months each years. Before each season commenced, the float was treated to several coats of graphite rubbed well in, a little boiled linseed oil being used to start the adhesion of the graphite. The float was made of smooth copper, and rather hard to treat, but all the coats of graphite which were put on hardly made any perceptible difference in the thickness of the coat. During my observation of the trap it ran several years, and never sank again.

While it must not be thought that all floats will sink, there are none which may not sink so that such a treatment, which is little trouble, may be of considerable value.

New Orleans, La.

J. O. F.

—*The Practical Engineer.*

"A 'Clodhopper' is the greatest producer and the smallest consumer of any number of the human race."

PREVENTING CORROSION OF STEAM MACHINERY

By W. H. WAKEMAN

Chapter VI.

Fig. 26 shows two separate generating sets, each consisting of a vertical engine driving a generator by direct connection. These were installed in a first class manner a few years ago, in a large building that was used for offices and living apartments. Only a few lights were needed during some portions of the day and night, while at other times the full capacity of both sets was utilized. Under these conditions it is more economical to have two small sets than to use one set large enough for the whole load, for if the latter plan was adopted the generator would be operated under a very light load during a large portion of the time, but by dividing the generating plant into two units it is possible to secure a fairly economical load, by using one until its full capacity is utilized, and then start the other to take one-half of the load.

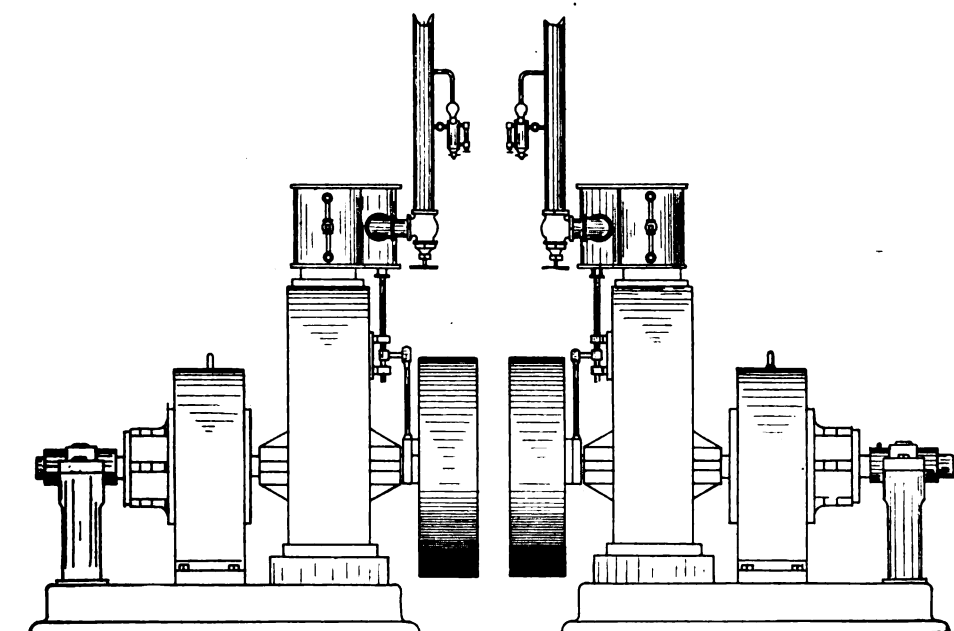


Fig. 26

At the present time these engines have been shut down for several months, and they probably will be for many more unless the owners are fortunate in selling them, and they are removed to another plant. It is quite possible for this to happen as they are in good order, or at least they were when first shut down, with the exception of a few small defects for which a remedy was not difficult to find, nor expensive to apply.

As electricity is still used in the building for power and lights, the reader will naturally wish to know why these engines were shut down for an indefinite period, and are now for sale. If these questions were answered by certain parties we would be told that it is because it is cheaper to buy current of a central station than to generate it in an isolated plant, but other parties would give a very different answer, after taking all facts bearing on the case into consideration.

This matter opens up the whole question of "The Central Station vs. The Isolated Plant," which has called forth much

discussion in the past, but has never been settled satisfactorily, and this chapter will not dispose of it, although some light may be shed on the subject, for the writer does not consider this case as any evidence in favor of selling an isolated plant and patronizing a central station, not even in this particular building.

The facts in the case are that after all figures submitted have been duly considered, and calculations made accordingly, there is another phase of the subject to be reckoned with, which is none the less important because it can never be fully printed on paper, and thus transmitted from one person to another. It is the personality of the managers and engineers of the isolated plants in question, and this makes more difference in the results secured than is generally believed. As the writer has spent thirty years in operating steam and electric plants, and has not failed to observe the effects of different kinds of management during this time, it would indeed be strange if at least a moderate fund of information had not been secured and stored for future use.

What can be said in favor of a man who will seek and accept

a position as manager of a steam and electric plant, when he has had no experience whatever that will enable him to discharge the duties of such a responsible position in a satisfactory manner? Why will such a man attempt to decide on the relative qualities of several applicants for engineers' situations when he knows nothing of the requirements himself? What words shall I use to properly express condemnation of a man who will abuse engineers and firemen until nobody will remain in his employ, and when they leave him in utter disgust will try to run the plant himself, dressed in an expensive suit of clothes, a standing collar and long cuffs? Does the manager of a steam and electric plant deserve success when he will not retain in his employ an engineer who takes any comfort

whatever during a twelve hour shift that must be continued for seven days per week, although his machinery is all in good order and working economically?

It is useless to point out the fact that such a plant no longer generates its own electric current, but it is deemed better to buy it from a central station, as the results are misleading unless all facts bearing on the case are told.

Live steam is used every day in this plant for heating water, and there is no reason why this could not be done by exhaust steam coming from an engine that drives a generator, producing enough current to supply all that is needed. Nothing more is required for this service than a large feed water heater piped so that the temperature can be regulated at pleasure.

Fig. 27 illustrates this action and shows how it is accomplished. Exhaust steam passes up through the heater in the usual way, and if the flow of water was unrestricted it would be heated nearly to the boiling point, but the globe

valves 2 and 3 are located where the engineer can readily use them to determine what portion of the water shall pass through the heater. Globe valves are recommended for this service because their capacity can be easily regulated. The by-pass valve 4 is to be partly closed to force some of the water through the heater, and closed tightly when all of it is to be heated. A relief valve is located at 5 to relieve the line and prevent

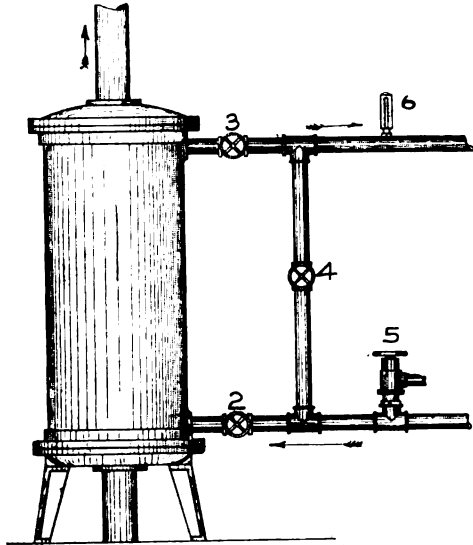


FIG 27

over-pressure in case that 2, 3, and 4 are all closed at once. A thermometer is shown at 6 by means of which the temperature can be observed at all times, for a boiling heat is seldom or never wanted in this place.

As this plant requires a day and a night engineer, they could care for a generating set if not required to do other work in the building, provided no more lights were used than are supplied from the central station now, but this introduces another feature, for more lights are always burning when the current is produced on the premises than when it is bought from outside parties.

Readers may wish to know what this has to do with preventing corrosion of steam machinery, and in reply I will state that it has a direct bearing on the subject, for if those engines were used alternately to generate the reduced load required in that building, instead of standing there month after month just as steam was shut off from them, all corrosion would be effectually prevented.

(To be continued.)

PAINT SPECIFICATION FOR STEEL AND IRON

MAINTENANCE WORK

CLEANING.—All broken or blistered paint, all rust, grease and dirt, must be removed by brushes, scrapers, blow torch, or by sand blasting with fine sand. The method to be selected and made part of the contract. Surfaces must be painted the day they are cleaned.

REPAINTING.—All surfaces shall be given two thorough coats of Dixon's Silica-Graphite Paint. The second coat to be applied only when the first is thoroughly dry, and to be of a different color. Surfaces must be perfectly dry when painted. The best round bristle brushes to be used.

The top of the package to be removed, and the paint properly stirred. No adulterating oils or thinners shall be used. The cleaning, painting and materials to be subject to inspection.

The paint to be furnished in original packages, **READY MIXED** for use.

CONSTRUCTION WORK

AT THE MILL.—Before painting, all surfaces must be thoroughly cleaned: free from loose scale, dirt and moisture. The entire surface shall then be given a well-applied coating of Dixon's Silica-Graphite Paint, Dark Red. Parts to be in contact and enclosed, shall receive before assembling a coat of the same material.

AFTER ERECTION.—Places damaged by abrasion shall first be retouched. The entire work shall then be given a second coat of Dixon's Silica-Graphite Paint, of a different color than the mill coat.

The top of the package to be removed, and the paint properly stirred. No adulterating oils or thinners shall be used. The cleaning, painting and materials to be subject to inspection.

The paint to be furnished to the mill and building site, in original packages, **READY MIXED** for use, as manufactured by the Joseph Dixon Crucible Company, Jersey City, U. S. A.

—From Dixon's *Colors and Specifications*.

MASTER CAR AND LOCOMOTIVE PAINTER'S ASSOCIATION CONVENTION

The annual meeting of the Master Car and Locomotive Painter's Association was held in Atlantic City, September 8, 9, 10 and 11, at Hotel Rudolf.

At all the meetings much interest was manifested. The papers read and the subjects discussed by this association are of much value to all interested in painting of cars.

A large attendance at the meetings, ideal weather and good fellowship throughout, voted the convention of 1908 an entire success.

Dixon was found in "69." Everybody called and had something to say about their satisfactory experiences with Dixon's Silica-Graphite Steel Car Paint. The ever increasing demand for Dixon's Steel Car Paint goes hand in hand with up-to-date methods and higher standards, and in thanking our customers for their expressions of confidence in Dixon's Steel Car Preservative, we invite the careful attention and investigation of all our railroad friends who may be looking for the *best* and the most economical.

Dixon's ranks first in wearing quality, elasticity and spreading capacity—the real thing for steel cars.

Our reputation as paint manufacturers is backed by 45 years' experience. If you tell us your needs, maybe we can benefit you.

DURING August last a "sunder" balloon was sent up from Pittsfield, Mass., carrying an aluminum box containing various meteorological instruments for recording the temperature and wind velocity of the upper air and the altitude attained.

The "sunder" reached a height of six miles and registered a temperature of thirty degrees below zero.



NEW WANAMAKER STORE AT PHILADELPHIA

As It Will Look When Completed

D. H. BURNHAM & CO., Architects WM. C. HADDOCK, Engineer of Construction THOMPSON-STARRETT CO., Contractors

Orders have been issued by John Wanamaker for the tearing down of the old Wanamaker store buildings on Chestnut street and running back to the completed portion of the new structure on Market, Juniper and Thirteenth streets.

The cost of the new structure was not announced, but the financing of the project involves \$6,000,000. For this the firm arranged with the Land Title and Trust Company an issue of \$6,000,000 of 5 per cent bonds.

Pressing to completion of this large project will be regarded throughout the country as a hopeful sign of restored confidence and prosperity.

With the beginning of the working day 1000 men will be put to work by the contractors in taking down the present buildings and thereafter upon the work of excavations and foundations. Soon after this part of the work is under way from 3000 to 4000 additional men will be employed in various shops getting the materials ready to be placed in position in the new building.

The "new" building must be referred to as the "old" building. The same architecture and class of materials will be carried through the newer structure.

It will be absolutely fireproof, comprising granite, brick, concrete and steel. The granite is all quarried and two-thirds of it cut and stored in Philadelphia, ready to be placed in the walls. This will hasten the completion of the structure considerably, and it is expected that it will be under roof and partially occupied inside of the coming year. It may require two years to make it absolutely complete.

Mr. Wanamaker has addressed a letter to each of the contractors, as follows:

"One of the main objects in going on at this time with the erection of the third and last section of our building is to give the work to Philadelphia mechanics and laborers. This is to request you, under your contract, to favor Philadelphia workmen with employment before hiring any of other localities."

The site of this great store and its mammoth structure now to be completed will contain as much area of floor space as a fair-sized farm of the present time, forty-five acres, and is an historic one. During the Revolutionary War it was occupied, along with Penn Square, as a camping ground for the soldiers of Anthony Wayne and other generals.

The new building now occupied by the Wanamaker store was built in two sections. The portion to be constructed, of about equal capacity to the part already completed, will be built in one section. When finished it will be the largest single mercantile building in the world.

—*Philadelphia North American.*

Two coats of Dixon's Silica-Graphite Paint were used for the 30,000 tons of structural steel contained in this mammoth building. The American Bridge Company supplied the steel work; the colors used were Dixon's Dark Red and Natural.

"Spiritual development is the breaking of all fetters growing out of material supremacy."

"THE anarchist represents Justice gone mad."

THE ADVANCE IN FREIGHT RATES

Mr. Alfred H. Mulliken, President of Pettibone, Mulliken & Company of Chicago, has gotten together some facts relative to freight rates which are interesting, and may be more or less new to many of our readers.

Mr. Mulliken contends that the prosperity of the railroads means prosperity to the masses of the people, and seems to show very clearly that merchants generally can well afford to stand an advance in freight rates; in fact, by making such concession to the railroads they make both themselves and the masses much better off.

The railways, Mr. Mulliken states, are the two largest purchasers of everything in the United States. Seventy per cent. of their earnings are immediately distributed for labor and materials. Within the last twelve months they have increased their payments to their employees over \$100,000,000., and this \$100,000,000. must surely be a benefit to the people.

Dividends paid by all the railroads in the United States in 1907, the most prosperous year, was 3.73 per cent. The average dividend per annum paid by all railroads in the past thirteen years was less than two and one-half per cent. per year.

Freight rates are lower in this country than in any other, and the service here is much better than in any other region on earth.

The capitalization of the railroads in the United States is lower than in any other country. The average is about \$67,000.00 per mile in stocks and bonds. In France, the average is about \$140,000.00. In Germany, about \$110,000.00. In England, about \$273,000.00 per mile, and one English road is capitalized at \$600,000.00 per mile, on which it pays four per cent. dividends. On these high values, the French railways pay 4.3 per cent., the English four per cent. and the German 6.1 per cent.

A reduction in freight rates below a fair return to the railroads does not help anyone. None are benefited by low prices, but all are helped by fair prices which yield a profit to everyone. This is true of general business, and it certainly is true of the railroad business.

All railroads have in the last ten years, and for many years previous, spent millions of dollars from earnings to improve their properties. These expenditures, in many instances, have not been capitalized, but have been charged off.

The man who works today receives higher pay than ever before. The poor are becoming richer every year. We do not have to refer to statements of savings banks. We only need to look about us. The people of the state of Nebraska have spent for automobiles in the last twelve months, \$1,841,000.00, enough money to wipe out the state debt. The masses enjoy more of the luxuries of life than they ever did, and their children have greater opportunities for advancement in every direction than ever before. Man is becoming more generous to his competitor in business and in all other walks of life, more solicitous for the welfare of others, and he devotes large sums toward the education of the growing generation, not only in our schools and colleges, but in trade schools and special and technical training which has been undertaken by railroads and other corporations.

The New York Central have more than seven shop schools in which young men are being educated in all the various

branches of shop work, and during their education receive regular pay as though they were working for the company. This system of shop schools has been adopted and is in use on the Santa Fé System, and many other large roads. The large railway systems and the great industrial corporations are constantly looking for intelligent young men to train for useful work, which pays high wages and salaries, such as were not known heretofore.

As our country has grown richer, all have shared in the increasing prosperity, and business men generally, in late years, have had time to lift their eyes above the grindstone of daily work and realize that they should do something to promote the welfare, not only of their own employees, but of the people generally.

This line of talk on the part of Mr. Mulliken about the poor becoming richer and every man being better off, is very much along the lines contended for by our late Vice President and Treasurer, Mr. John A. Walker, who always stood up for the masses, and yet who claimed that the laboring man was not only better off than he had been, but was getting better off each year.

What we all desire is what Mr. Mulliken says we should have, facts, not words. We know that the country grows continually, it is constantly expanding in all directions. This expansion is diminished or increased, but it moves and never stops.

We all desire prosperity, but we cannot be prosperous if any large interest among our people is suffering and depressed.

Mr. Mulliken contends that the proposed increase in freight rates will not change any distributing center, and will make no difference in any line of business to the people engaged in it. It practically makes no difference whether the freight rate on steel from Pittsburg to Chicago is eighteen cents per one hundred pounds, or twenty-five cents per one hundred pounds, provided every user pays the same rate. But it makes an enormous difference, not only to the steel interest, but to business generally, if there is only a demand for fifty per cent. of the steel producing capacity of the country.

The railroad expenses have increased in the one item of labor alone, \$100,000,000.00 in the last twelve months. They face this situation: either reduce wages, increase freight rates, or go into the hands of receivers and stop all payments for interest and dividends. The roads have been forced by public opinion, and by the administration, to advance wages, and by the same are unable to reduce them. They are, therefore, compelled to face the other two alternatives.

Any advance in freight rates will eventually fall on the consumer, but it will be so small that he will not notice it. For instance: a ten per cent. horizontal increase in freight rates would hardly be known by any consumer. This increase on a suit of clothes from New York to Chicago would be less than one cent per suit; on a pair of shoes from Boston to Chicago, less than one-half cent per pair; on a derby hat from New York to Chicago, less than one-third cent per hat. To the railroads it would mean an increase of 140 to 150 million dollars in earnings per year.

It is absolutely true that the railroads cannot prosper without helping the people. They don't hoard their earnings. As stated before, seventy per cent. of their gross earnings are spent immediately for labor and materials.

Mr. Mulliken contends that if this advance in freight rates takes place, it will improve the credit of the railroads, it will enable them to sell long-time bonds at a fair rate of interest, and to obtain money to properly maintain and improve their properties. Until such an advance is made the railroads will not have an improved credit upon which to base expenditures which will bring about a general revival in all lines of trade.

THE MODERN RECIPE

"Keep pestering the people and you will win."—Premier Campbell Bannerman to the Suffragettes.

It's a mighty safe rule to follow when you're playing this mundane game,

If you're chasing the nimble dollar or the super-nimble Fame,
No matter what you are boasting, set it down ere you begin:
If you pester the people long enough you are pretty sure to win.

If you're backing a new religion that you're certain is fire-proof,

If you've patented a card game, or a leakless brand of roof,
Get out your drums and trumpets, sign a press agent or two;
If you pester the people long enough, success will come to you.

It used to be that merit was a shy and shrinking thing,
With a fondness for the background, like a violet in the spring;
But modesty's a dead one (see billboards and street car ads.),
Just pester the people long enough and yours are the Fame and scads.

Oh, the patient, pestered people—they must stand for the cranks and bores,

Must stand for the fakes and nostrums that crowd each day in scores;

Ping-pong, pickles, and posters, and praised prunes without end!

Just pester the plodding public, for nobody is IT'S friend!

—*Denver Republican*.

Now, what the gent from Denver says is true, too true, the jester,

But what's a Dixon man to do, when there's no one left to pester?

Each blooming customer we call on, North, East, South and West,

They each and every bless'd one say, "Yes, we know Dixon's is best."

—A. L. H.

NEW JERSEY'S NAME

In the early part of the seventeenth century the Lieutenant-Governor of the Isle of Jersey (originally named Caesarea, after Julius Caesar) was one Sir George Carteret. The Isle of Jersey, which still belongs to Great Britain and is still famous for its cattle, is situated in the English Channel. When Carteret secured his grant from the Duke of York of land in America, the portion of which he and Berkeley were to become the proprietors was referred to as Nova Caesarea, or New Caesar, or New Jersey. Carteret subsequently sold his right to the upper half of the province, but the name remained, as we all know, to this day. Fiske says "Jersey" became the vernacular for "Caesarea."—*Evening Journal, Jersey City*.

FALL PAINTING

It is sensible to paint at this season. Paints applied now give better service than paints applied before or during the hot weather.

The kind of paint you will select is the next important consideration, and you no doubt will wish to take advantage of your past experiences and the experience of others to insure a wise selection.

Dixon's Silica-Graphite Paint has been *proved*. It has back of it an unapproached record of 45 years of most successful service. Its history is a guarantee of best results. Dixon's seems to improve with age.

We have only One Standard of excellence, designed for durability and economy. No other paint possesses the same characteristics found in Dixon's Silica-Graphite Paint. No other paint pigment is so inert, so indestructible and can wear so long under adverse conditions as the famous Ticonderoga flake graphite and silica—and no other paint has back of it so many *time records*.

Dixon's Silica-Graphite Paint is unequalled for metal or wood. It is the best possible protective coating for surfaces subjected to heat, acids or brine drippings. It's worth considering.

THE BRUNSWICK, BACK BAY, BOSTON, MASS.

Messrs. Joseph Dixon Crucible Co.,

Jersey City, N. J.

GENTLEMEN:—At the last meeting I placed before the members your sixty booklets on Graphite Lubrication which you sent me, and they all disappeared. I find the boys here are using your graphite for many different purposes.

I have just begun to use your graphite grease for elevator cables, put up in packages in the shape of a book. This is the best and handiest thing I have gotten hold of yet, and no engineer who has once used it in this form would ever think of lubricating a cable in any other way or with any other substance. The man who got up that idea must have greased a cable sometime himself.

Thanking you for the literature you sent us, I am,

Very truly yours,

H. A. GREENE, Chief Engr.,

Sec'y Roxbury No. 14, N. A. S. E.

COUNTING THEM OUT WITH THE LEAD PENCIL

Collier's, in an interesting article on bridge whist, considers the lead pencil as a strong factor in the game. It says that the varying values in bridge whist account for its peculiarly exasperating qualities, and its skill in breaking up families. The lead pencil is forever elbowing its way into the game, and nullifying the most brilliant playing. The winners may, by the most magnificent and superscintillating whist, manage to drag out a trick in the face of great odds and win a rubber. Yet, at the end of the game, the losers may excuse themselves, and, after half an hour's work with a bank examiner, demonstrate that the winners owe them anywhere from thirty cents to a month's house rent, simply because the losers were skilful enough to hold the honor cards that were dealt them.

DIXON'S graphite publications sent free upon request.

PROLONGING THE LIFE OF CRUCIBLES

By DUDLEY A. JOHNSON

Part II

STORAGE

Crucibles should be stored in a warm, dry place, either back of the furnaces on the flues, where the hot gases from fresh fires will not strike them, or on the top of the core oven, but don't put them in the core oven where they come in contact with the moisture from the wet cores; or, if stored on top of the boilers, care should be taken to see that all steam pipes are tight and there are no leaks, and that they are away from the whistle which allows steam to escape. It is generally conceded that a crucible properly stored in a foundry is from 10 to 20 per cent. more efficient at the end of a year. They season and solidify, and are away from the injurious effects of the damp air. The longer they are stored in the proper atmosphere the better.

ANNEALING

Before using, the crucible should be slowly brought up to a heat of 250 degrees Fahr., or over, but if this is accomplished too quickly a scalp is the result, or an internal fracture which will afterwards cause a leak. A No. 200 crucible requires about 10 hours to bring up to this heat. The pot should then be immediately filled with metal, and a heat taken off without allowing it to cool.

FIT OF THE TONGS

The fit of the tongs is very important. On crucibles above size No. 50, tongs with double prongs should always be used, and preferably of the "grab" pattern. The upper prong prevents the pot from wobbling, and the "grab" device prevents squeezing. The tongs should grip the crucible below the bilge and lift it without undue pressure, as if it were in a shank or a basket. When a crucible is at white heat it is soft and leathery, and many crucibles are ruined by forcing the tongs together and pounding a ring on the handles. It is a great advantage to have two sets of tongs for every crucible; one for the new pot, and one for the pot half used, which is smaller. The tongs should be "shaped up" at frequent intervals.

SHANKS

Shanks of the scissor pattern are hard on crucibles, because of the tendency to seize the pot too high up and squeeze it. The plain ring pattern shank is the best. The ring should be wide and tapered to conform to the contour of the crucible. It is not necessary to use clips with this style shank.

FUEL

The fuel should be dry. Wet coke produces moist gases and steam, which causes alligator cracks. Sulphur in the fuel shortens the life of the crucible materially. Twenty-five per cent. more heats have been obtained by a change of fuel.

POSITION OF THE CRUCIBLE IN THE FURNACE

At the beginning of the heats, the top of the crucible should never set higher than the bottom of the flue-hole, and if the work will permit, the space around the pot and at the bottom

should be sufficient to hold enough fuel to take off the heat without re-coking. A long narrow furnace is preferable to a short wide one.

DAMPERS

The drafts and dampers, if arranged to produce a reducing atmosphere, will lengthen the life of the melting pot. An oxidizing flame is always unfriendly to a plumbago crucible.

CLINKERS

The clinkers should be removed from the sides of the pot as the tongs are put on, and from the bottom of the pot before it is set on the floor. It should always be set on a bed of dry sand; never on hard bricks.

SLAG

In melting scrap and dirty metal, the inside of the pot becomes thickly coated with slag, and this should be removed with a scraper. It can easily be accomplished when the pot is hot. Then the crucible has more holding capacity, and the heat passes through it more readily.

SOAKING

It is bad practice to leave the metal on the fire after it is ready to pour; soaking in this way an extra half hour has a more injurious effect on the crucible than the entire previous heat.

KINDS OF METAL

The melter must not expect as many heats in melting one metal as another. From three heats in melting nickel, to five or six in melting steel; approximately 25 are reached in melting copper, while the heats run into the 40's in melting composition. If, when ordering your crucibles, you could give a hint to the maker as to what metal is to be melted, he would know better what crucible to send.

FLUX

Where it is necessary to use a flux to clean the metal, it must be expected that the life of the crucible will be shortened, as nearly all fluxes attack the binding material in the walls of the crucible to a greater or less extent.

COOLING BETWEEN HEATS

If the crucible can be recharged and put back into the fire at once, a greater number of heats will result than if it is set away and allowed to cool between each heat.

LENGTH OF HEAT

The time of the heat is also to be allowed for. If the heat is taken off in an hour or an hour and a half, the crucible will not last as long as with the lighter punishment of a two and two and a half hour heat.

BUTTONS

Don't leave any metal to cool in the crucible, but pour until the melting pot is entirely empty. In the parlance of the shop, don't leave the crucible so that you will find a button in the bottom when it has cooled off. These buttons may have small threads or spikes of metal which will attach themselves to the crucible walls, and they tear the walls of the pot

as they come out; if left in the crucible, when the next heat is taken off, they expand more rapidly than the walls and break the pot.

WEDGING

Be very careful not to allow the ingots to wedge in charging the crucible, but place them in loosely, or expansion will break the pot.

FURNACE BOTTOMS

See that the crucible has a good bottom to rest on in the furnace. Some foundries use brick for the crucible to set on after it settles down, and these bricks should be smooth and level. If they get on edge or are set cornerwise, the hot crucible full of metal settling down on them or on a hard piece of clinker will have a hole punched through the bottom. Remember there is a great deal of weight above the bottom of this leathery pot.

POKER

Be very careful with the use of the poker, as it is an easy matter to punch a hole through a hot crucible.

In addition, we might say that it is important to always place the pot in the center of the furnace, so that there is an equal fuel distribution all around. It is also good practice to turn the pot partly around after each heat, that is, if the lip of the pot faces the flue-hole it should gradually be turned after each heat. This insures equal wear on all sides of the crucible.

OLD IDEAS GIVING WAY TO NEW IDEAS

Publications that are in very close touch with active business, present conditions, and up-to-date methods, state that there is now an eclipse of the "one-man" idea, and that it is an eclipse that will "not come off."

It is said that individual brilliancy, while perhaps being rewarded more liberally in a financial way than ever before, is no longer being "played up" so heavily as in the past.

The "one-man" idea is being eclipsed by that mysterious thing known as "organization," and the manufacturing companies, instead of being mere hastily formed groups of men and capital to exploit and advance the respective goods, have become more institutional in character, with conservative tendencies and certain well defined lines of policy.

PRSRVYPRFCTMNVKPTHSPRCPTSTN

To show the importance of the vowel "E" in all writings, one needs only to refer to the above which was an inscription over the decalogue in a country church. It is stated that this was not read in over two hundred years. If you will insert the letter "e" in a good many spaces, you will be able to read, "Preserve, ye perfect men; ever keep these precepts ten."

LUBRICANT FOR FITTING ALUMINUM THREADS

When screwing an aluminum article on to an iron or steel part, much trouble is often experienced by the breaking and tearing of the threads of the softer metal. This can be prevented by lubricating the screw well with a mixture of oil and graphite.—*Machinery*.

THE *New York Times* reminds us that the rascal in "The Vicar of Wakefield," when finally brought to an accounting, confessed to Dr. Primrose that, although a clever man, he had succeeded in making only a bare livelihood by his rascality, and, as a modern example, points out to us that the banker who disappeared a year and a half ago leaving a shortage of \$541,882, when captured in a miserable cabin in Mexico, had but one cent over a dollar in his possession.

The occupation of a thief, as some one has figured out, including its long periods of enforced, and nominally penitential, inaction, nets him for his enterprise and disproportionate risks about three dollars a week—less than union wages.



The Stenographer Uses Dixon Pencils

For the stenographer a special pencil is made known as Dixon's *Stenographer*. In diameter this pencil is slightly smaller than standard, a size that has been found by stenographic experts to tire the hand least readily. Only one quality is manufactured but there are three degrees of lead; soft, soft medium, and medium.

Dixon's *Stenographer* pencils make clean-cut notes, are smooth, rapid and easy.

JOSEPH DIXON CRUCIBLE CO.,
JERSEY CITY, N. J.

"HOW'S BUSINESS?"

With branch offices in all the largest centers and traveling representatives covering practically every part of the country, the Dixon Company is in a position to constantly take the pulse of business. We recently sent requests to our offices and representatives asking for special reports from their particular sections. Some extracts from these reports follow:

CHICAGO, ILL.

Buyers seem more hopeful. They are inclined to be more liberal in giving orders. The general impression is that business will increase in volume immediately after the election.

Crops are very promising. Most of the states will have what are known as bumper, record breaking crops and prices will be good. On the whole the situation could hardly be more encouraging.

SAM MAYER.

PHILADELPHIA, PA.

From a practical point of view, it is necessary to get a microscope to note the improvement. Last year we had natural consumption, plus great expansion, plus great extravagance. This year there appears to be no expansion, only natural consumption, plus great economy. Collections are not any too good, and this makes many disinclined to buy.

From my study of the situation and inquiry amongst well informed people, I am lead to believe that the ebb tide is at an end, and the flood tide has set in, and that there will be a slow and gradual improvement, but no jump or boom neither before nor after the election.

The recent long dry spell has injured the crops. In some sections the potato crop is a total failure. The early corn crop is poor. The late corn crop will be fair.

WM. J. COANE.

SAN FRANCISCO, CAL.

No one knows absolutely how soon business is going to get back to a normal state again. In my private opinion, the recovery will be of a slow growth, and when we get back to good brisk normal conditions again we will have reached that condition with hardly realizing the approach.

JAMES G. ALLEN.

BOSTON, MASS.

Replying to your letter relative to business conditions, we are pleased to inform you that in New England buyers appear to be more hopeful and are inclined to give bigger orders than they were giving some time ago.

Concerning your Boston Office, we are pleased to state that prospects look very encouraging, and it is a pleasure to make plans for properly handling the growing business which is coming into view. It is interesting to observe that our paint sales for June and July of this year show a gain of about 100 per cent. over the paint sales for June and July of 1907.

H. A. NEALLEY.

ST. LOUIS, MO.

Buyers are feeling much more confident, and are placing much larger orders, and their general opinion seems to be that the trade this fall will be good, and that the last half of this year will show a great improvement over the first half, and that next year business will be very much better.

Crops are very promising, and the railroads are getting busy, and the idle cars are rapidly diminishing.

The large plants in this section are resuming, and the percentage of idle people is rapidly diminishing.

Our July sales for 1908 were 50 per cent. over those for July, 1907.

S. H. DOUGHERTY.

PITTSBURG, PA.

Buyers seem more hopeful, but are still slow to increase the size of their orders. Most people in this locality seem to think that business will start off in good shape about the first of the year 1909. Crops are very promising, locally, and conditions look very good for future business

D. M. HOWE.

SOUTHERN STATES.

Most buyers seem more hopeful and look for normal business immediately after election, with large increase in business before Spring 1909.

Crops are most excellent almost everywhere. The fruit crop is also splendid through the South.

J. FRANK DRAKE.

MIDDLE WEST.

Buyers and managers report much improvement in their orders received. Some disposition at Denver, Kansas City and Dayton to increase production. Buyers will not increase size of their orders, or anticipate immediate needs, except at price concessions.

Yes, crops are very good and net price to farmers entirely satisfactory.

E. A. ST. JOHN.

NEW YORK AND EASTERN CANADA.

Buyers are more willing to order and very hopeful, but are cautious not to overstock.

Many manufacturers in this territory tell me they are doing 75 per cent. of the business they were before the depression.

All feel the good crops as soon as moved will greatly help.

The transportation business on the Great Lakes has been hit badly; little ore, metal of lumber coming down and very few freights for coal going up. These conditions effect such cities as Buffalo, Toronto and other Lake cities, as the transportation people, miners, shippers, etc., gather their supplies, groceries, etc., from these points.

The miners must very soon commence to shove shipments East, and call for large supplies of coal before cold weather.

All western trade is reported daily improving.

A. K. INGRAHAM.

JERSEY CITY AND VICINITY.

The buyers in general are very hopeful for the near future regarding the increase in business. They are unanimous that business will resume as in the past after election.

The building trade is very quiet, the foundry trade shows a slight improvement. Manufacturers say business is improving.

I. L. LEVISON.

PACIFIC COAST AND HAWAIIAN ISLANDS.

The Hawaiian Islands I found to be unusually prosperous, they having turned out the largest sugar crop on record, namely about 560,000 tons at an average price of about \$4.20. The government is about to start work on the Honolulu Pearl Harbor Naval station. Besides this, are erecting very strong fortifications around Honolulu. This, of course, turns loose a good deal of money in Honolulu in the way of labor, etc. One thing I found upon my recent trip is that the merchants

are changing their methods somewhat and instead of buying a year's supply, as they used to do, they are now buying in smaller lots and oftener. This has been brought about mainly by the unusually good service shown by the American Hawaiian Steamship Co., who land goods from New York to Honolulu in from 31 to 41 days.

Regarding business here in southern California, business seems to be on the increase. People here seem to think that immediately after election, that general business will get back to normal in a very short while. The outlook for crops on the Pacific coast seems to be very good and the people in this section are looking forward to another large orange crop.

Some of the largest corporations on this coast say that money has become very easy again and the collections are comparatively good and that within the next two weeks or a month that they expect to get back to their old basis and buy goods in the usual large quantities. A. C. BOWLES.

It will be observed that the general trend of the reports is optimistic, though it must be said that promise of better business in the future is the chief basis for this optimism.

However, we want to put ourselves on record as being optimists. Not the variety that "rush in where angels fear to tread", but who believe that healthy, confident thoughts help to produce that condition.

We can all recall the fear with which as children we went to bed after an evening of ghost stories. Every shadow, every creaking board would violently startle us. Nor have we "grown ups" entirely outgrown the "ghost story"—the frenzied panics so often produced by the cry of "Fire" prove how imagination may be worked upon, and with what result. We can work up a force for good, the same as for evil, though it seems to be more difficult and the effects are less pronounced. That produced on the patient by the mere presence of the "family doctor," optimistic, cheery, confident, is an example, however.

That's the key note, confidence. When confidence is missing everybody wants to hang back and see the other fellow go ahead.

An impressive advertisement put out by the Curtis Publishing Company emphasized this matter of confidence. It pointed out that not one person in ten could tell all-wool cloth, or a genuine diamond. When you purchase these goods, you go to the merchant you trust—the one who has your confidence.

To paraphrase Elbert Hubbard, let's all get on the wire for "confidence vibrations."

WHEN YOU go gunning bear in mind that Dixon's Graphitoleo is the finest thing you can use for lubricating gun locks. Dixon's Graphitoleo is made of vaseline and Dixon's Finely Powdered Graphite, it is therefore equally good as a lubricant or a rust preventive.

VERY FUNNY are the daily papers. In the editorial columns they bewail motorphobia in the autoists and insist on the arrest and punishment of the high speed goers, and in their news columns they advise the autoists of the speed traps and tell how to avoid them. The publisher was right who said, "find out what the people want, print it, and you can sell your papers."



Dixon's Black Sticks to Stacks

And there are two reasons why it does.

Silica and graphite which form the pigments for Dixon's paint are unaffected by any degree of heat encountered in practise. You can't burn them off the stack. That's one reason.

The vehicle for Dixon's Silica-Graphite pigment is the very best double boiled linseed oil. Now while linseed oil is widely used as a paint vehicle, it is often combined with some pigment (say a metallic pigment) that unites with it chemically and destroys the elasticity and vital life of the oil.

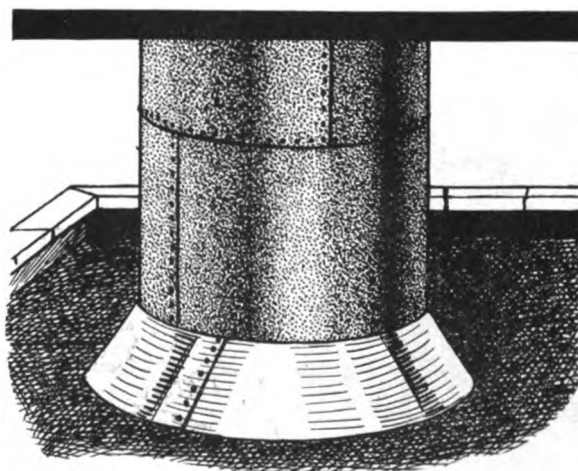
But, the natural life of the linseed oil is preserved in Dixon's paint because the pigment, silica-graphite, is inert—this means better protection and longer service.

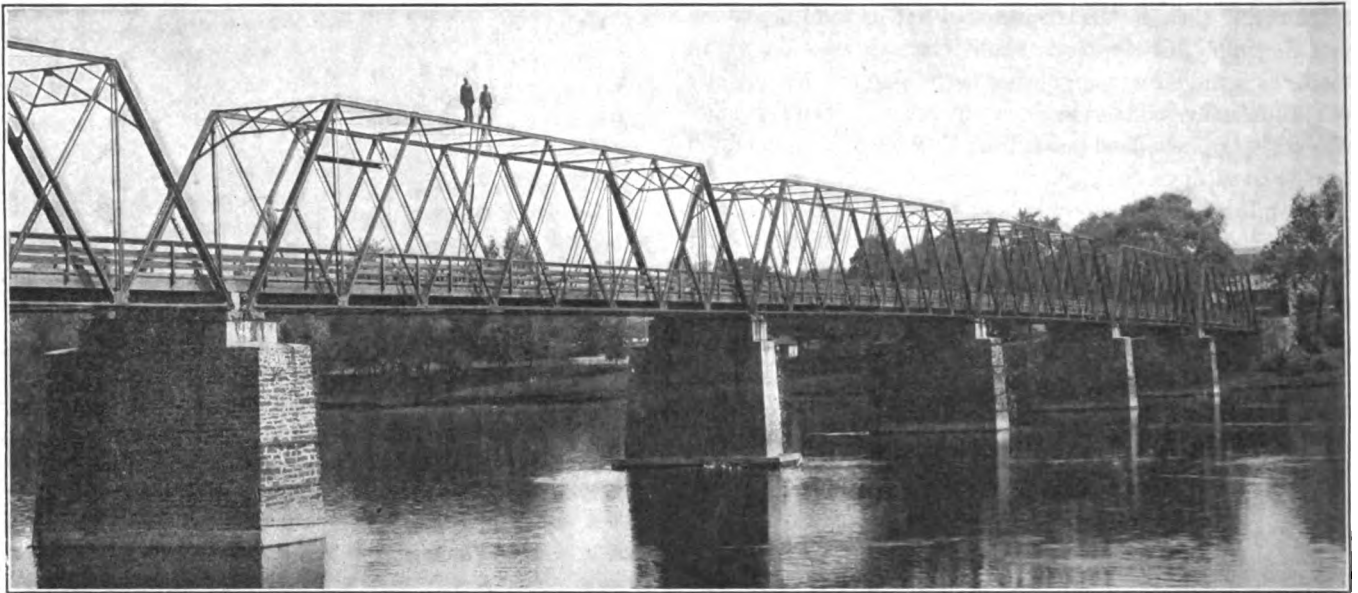
That's the whole story, and that's why Dixon's Silica-Graphite Paint, Black, is so generally used on stacks.

Write our Paint Department for "Philosophy of Protective Paint."

Joseph Dixon Crucible Co.,

Jersey City, N. J.





BRIDGE THAT CROSSES THE DELAWARE RIVER

AMERICAN HISTORY AND DIXON'S PAINT

The two structures shown on this page will interest the reader. The Potomac Bridge joins the State of Virginia with the District of Columbia, close to George Washington's old home, and the other bridge spans the Delaware, marking the place of Washington's crossing. The Potomac and the Delaware Rivers flow through a land rich in historical interest, and they vividly recall the stories of Washington and his achievements. These bridges will serve to freshen the memories of our historians who visit these spots.

The history of Dixon's Silica-Graphite Paint goes back fifty years and is proving its excellent preserving qualities in its use on these two bridges shown.

Dixon's Silica-Graphite Paint affords absolute protection, and governments, railroad companies and municipalities are using Dixon's for bridge work because it is the only coating not injured by brine drippings, sulphur fumes, acids, weather and water.

The fall painting season is here, order Dixon's Silica-Graphite Paint—strictly *one quality*.

"SOME people will 'squeeze a cent' until the eagle not only squeals, but bites."

WHAT IS PERCENTAGE?

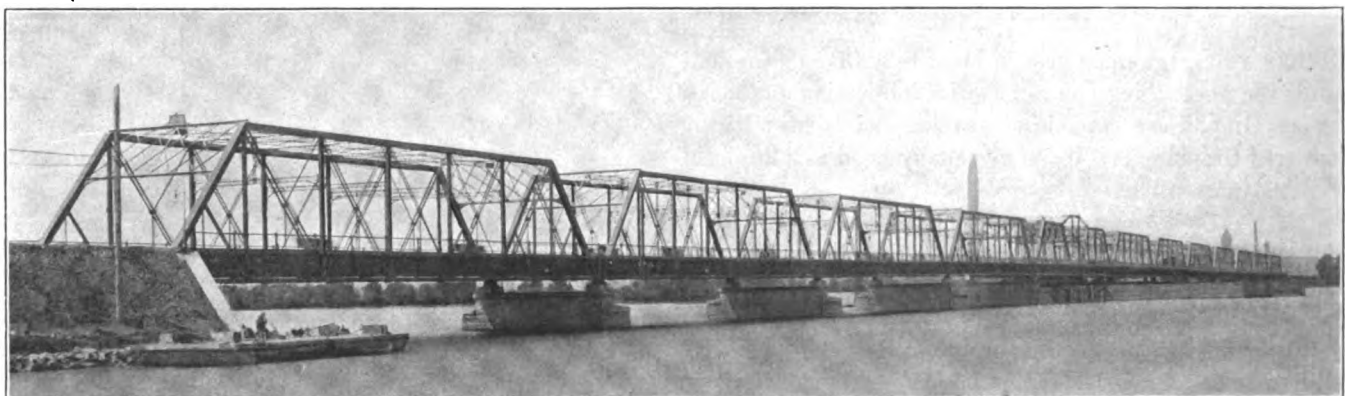
The ordinary man has a small chance when he comes up against the champion advertising man.

The ordinary man desires to put on his buzz wagon a certain accessory. In looking over the advertisements in his journal he reads that 75% of the contestants in an automobile tour choose a certain make of accessory in spite of all the inducements made by other manufacturers of a like article.

That about settled the question in the mind of the ordinary man as to which of the several makes of that particular thing he would buy. Unfortunately for his condition of mind, he turns over the page of his journal and sees in another advertisement that 63% of the contestants in that self-same automobile tour used the make of another manufacturer, and used it in spite of the fact that some other manufacturers offered their goods as free gifts.

Now the ordinary man claims that if 75% of one make was used and 63% of another make was used by the same set of people, that the ballot boxes should be reopened and a recount made.

"WHEN man discovers that he is a fool, that is the beginning of wisdom."



POTOMAC BRIDGE AT WASHINGTON, D. C.

Graphite

VOL. X.

NOVEMBER, 1908.

No. 11.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

COPYRIGHT, 1908, BY JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

FLYING MACHINES

In an article in the *Nineteenth Century and After*, Prof. Simon Newcomb expresses considerable doubt as to whether the airship or dirigible balloon will be found practicable and even if it is worth while.

Among other things, Prof. Newcomb points out that the chief resistance which a railroad train has to overcome is the resistance of the air, and that the amount of this resistance which an airship would have to overcome would be vastly greater than in the case of the train. The reaction of the wheels of a train on the ground is a positive advantage in propulsion; in the airship the only reaction is that of the air, a propelling power much greater than that of the train must be obtained. It can be obtained only by the expenditure of a proportionately

greater consumption of fuel—all of which has to be carried, and the power of gravitation overcome in order to do it.

This consideration is interesting, because a great many people seem to regard the overcoming of the power of gravitation as in some way an advantage on the side of the airship, instead of a handicap which may forever prove economically insurmountable.

As to the flying machine, Prof. Newcomb reminds us that no engine has ever yet been built by human skill which is proof against accident, and a flying machine, being supported only by its motion in the air, can never stop in flight to have its machinery repaired or adjusted. This fact was tragically illustrated in the terrible accident at Washington. The slightest accident to the propelling machinery of the flier must always involve the danger of the destruction of the machine.

Moreover, in the flier a horizontal surface proportional to the entire weight to be carried must be maintained. If Wright's airship were to attempt to carry a third man, its surface would have to be enlarged one-third, and so on for every addition of weight. This seems to put a bar on carrying very much weight. Moreover, no flier can be navigated out of sight of the ground, and must come down instantly if a fog arises.

"THERE WAS no necessity for religion until man 'fell' from truth."

THE WORD "CRUCIBLE"

From all we know of and read of Boston's culture, we were not surprised that the word crucible suggested something concerning the cross and religious matters.

The following letter, it is needless to say, is from Boston.

"Joseph Dixon Crucible Company: Kindly send us a catalogue of your crucible specialties, with lowest prices.

"Let us know if you keep this one in particular, viz: A statue of Christ on a wooden cross with a number of holy pictures that revolve by turning a wooden knob. This article is sold extensively by a number of firms on installments for five or six dollars each.

"If any of your goods are suitable for our trade we can use them in quantities."

The latin word *crux* was thought to be the derivation, in several languages, of the word crucible. The story (probably false) was in vogue that *crucibles* were marked with a cross to prevent the devil from interfering with the chemical operations performed in them. This story fails to account for the use of "cruciblum" in the sense of a hanging lamp, which seems to have been the original one.

A JUST REBUKE

Once upon a time one of the Dixon staff of office people came into the office of the late Vice President John A. Walker and expressed great surprise at the stupidity of a factory man, saying that the man was apparently devoid of eyes and brains.

Mr. Walker listened patiently and with quizzical smile on his face, and, when the office man had finished with remarks, quietly asked how much was paid that factory man per week. When he was informed that the man's pay was ten dollars per week, he smilingly asked how many eyes and how much brain could be bought for ten dollars per week and suggested that very likely the Dixon Company was getting its full value from the man, and that if that factory man were all that the office man thought he should be, the Dixon Company wouldn't be able to get him for ten dollars per week.

The office man retired from the Vice President's office greatly impressed by Mr. Walker's remarks and much wiser then when he entered. The lesson has never been forgotten.

ON YOUR fishing excursions do not forget that Dixon's Finely Powdered Graphite, when thoroughly rubbed into the fish line, makes it water-proof and prevents kinking.

Then again, there is no better lubricant for the bearings of the reel, unless it is Dixon's Graphitoleo.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

OFFICERS:

President—EDWARD F. C. YOUNG,
Vice Pres.—GEORGE T. SMITH,
Treasurer—GEORGE E. LONG,
Secretary—HARRY DAILEY.

DIRECTORS:

EDWARD F. C. YOUNG,	WILLIAM MURRAY,
GEORGE T. SMITH,	EDWARD L. YOUNG,
GEORGE E. LONG,	HARRY DAILEY,
WILLIAM H. CORBIN.	

BRANCH OFFICES:

NEW YORK SALESROOM, 68 Reade Street.
PHILADELPHIA SALESROOM, 1020 Arch Street.
SAN FRANCISCO SALESROOM, 145 Second Street.
CHICAGO OFFICE, 1324 Monadnock Block.
BOSTON OFFICE, 636 John Hancock Building.
PITTSBURG OFFICE, 2213 Farmers' Bank Building.
ST. LOUIS OFFICE, 501 Victoria Building.
WASHINGTON, D. C. OFFICE, 925 Colorado Building.
BALTIMORE OFFICE, 1005 Union Trust Building.

CELEBRATIONS

We have had considerable in the way of celebrations lately. These, in addition to portraying proper sentiment, have a certain practical value in that they beget enthusiasm, a valuable quantity in the world's work. They are recreative.

Collier's under date of October 10th, devoted considerable space to two celebrations: one concerning Philadelphia's 225th birthday, or "Founder's Week," as it was called, since seven days were devoted to it; the other concerning the American Fleet's visit to Australia.

The celebration of the visit of the American Fleet to Australia and New Zealand was an especially noteworthy affair. The welcome given the fleet was cordial almost to the degree of flattery. A particularly pleasing feature of the celebration was that it extended beyond the mere matter of diplomatic courtesy. We have at hand a copy of the *Auckland Weekly News*, dated August 13th. 24 pages of this number were devoted to the fleet's visit, and to those who are not familiar with the periodical mentioned, we would say that its pages

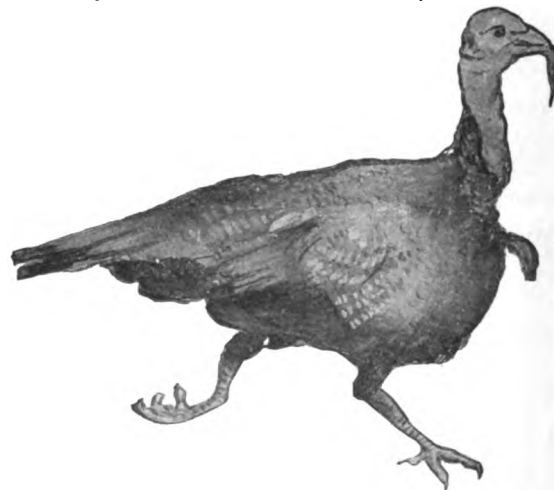
measure 12 by 18 inches. Among the illustrations is a full page picture of President Roosevelt and a number of photographic views of the American Fleet. Some pages show the city's decorations, a few of these taking the form of electrical displays containing such sentiments as "Welcome," "Hail Columbia," etc. Even the cartoon is in evidence, featuring the incidents of the celebration with touches of humor.

We also see that Pittsburg has recently celebrated its 150th birthday.

This leads us naturally to announce the 10th anniversary of GRAPHITE, which will be celebrated with the December number. While this event is of small significance compared with those we have mentioned above, we believe it will be of interest to our readers. We plan to make a special issue of the December number and if you believe that any of your friends will be interested in receiving this number, just drop us a line, giving their names and addresses.

THOUGHTS THAT TURN TO TURKEY TIME

It is impossible for us to truly appreciate what the first Thanksgiving Day meant to the Pilgrims. Naturally these ancestors of ours partook of the age in which they lived; their training, habits of thought, modes of life and surroundings were distinctly different from ours of today.



But one appreciable feature of the first Thanksgiving celebration in 1621 has come down to us intact—turkey. In reporting this first occasion *Lossing's Our Country* says: "Great quantities of wild turkeys and deer were gathered at Plymouth, and for three days the Pilgrims indulged in rejoicing." And the turkey still survives—until the proper time for its sacrifice arrives—as a fixed feature of the Thanksgiving feast.

Thanksgiving is a home celebration. May all of us be home to enjoy the "dinner bird."

Which will you have, the light or dark meat?

A WRITER in the *New York Times* suggests that if American girls must seek titled foreigners for husbands that they "go for heaven's sake to Hawaii or South Africa, where royalty has at least ambition enough to climb a tree and pick a coconut."

THE necessity for lubrication is emphasized by the fact that you can't run machinery without it. The necessity for Dixon's Flake Graphite is emphasized by the fact it improves oil or grease lubrication. And by the way, did you ever try it?

PREVENTING CORROSION OF STEAM MACHINERY

By W. H. WAKEMAN

Chapter VII.

Fig. 28 illustrates a first-class fire pump that was put out of service several months ago, owing to changes made in the plant whereby another pump answers the purpose. No measures have been taken to preserve the cylinders from cor-

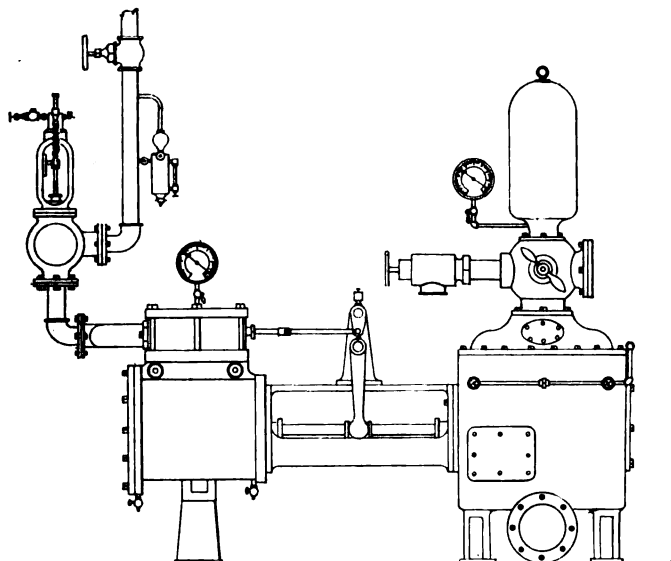


FIG 28

rosion, although they are worth taking care of, as they are 14 inches in diameter, while the water cylinders are one-half as large and the stroke is 12 inches. This pump is located in a damp place that is not free from leaks whenever it rains, and

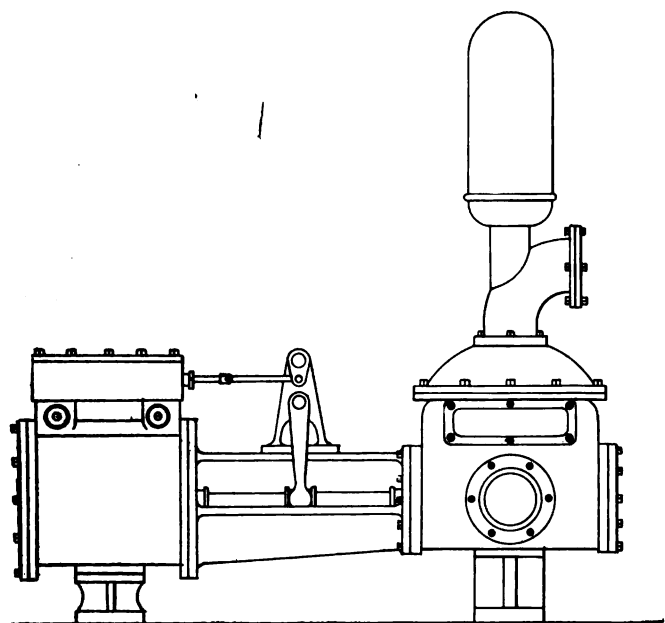


FIG. 29

as the steam and exhaust pipes are still connected to other parts of the system, water is sure to find its way to both the outside and the inside of this machine. When I saw it the automatic regulator was still of some value, but such a device

soon corrodes enough to be useless, and is of doubtful value even after it has been thoroughly cleaned. It is much better to disconnect it and cover the parts with Dixon's Motor Grease No. 676 as that will prevent pitting, and when the device is to be used again it will be well lubricated without further attention. This will also keep the cylinders, steam chest and valves in good order for a long time if thoroughly applied.

Fig. 29 is a large elevator pump that is no longer used in the building where it was installed when new, and probably never will be again, owing to extensive changes in the plant. The cylinders are 14 x 8 x 12 inches according to the expression generally used in such cases, meaning that the steam cylinders are 14 and the water cylinders 8 inches in diameter with a stroke of 12 inches. It would be much more comprehensive to state it as 14 and 8 x 12 inches for the same meaning.

Nothing has been done to preserve the working parts of this machine from corrosion and pitting, although it would not be an expensive job to cover them with the same material that was recommended for the preceding illustration, and when a prospective purchaser saw them well preserved he would not be scared away on account of finding them in bad condition, but there seems to be little hope of any precautions being taken here along this line.

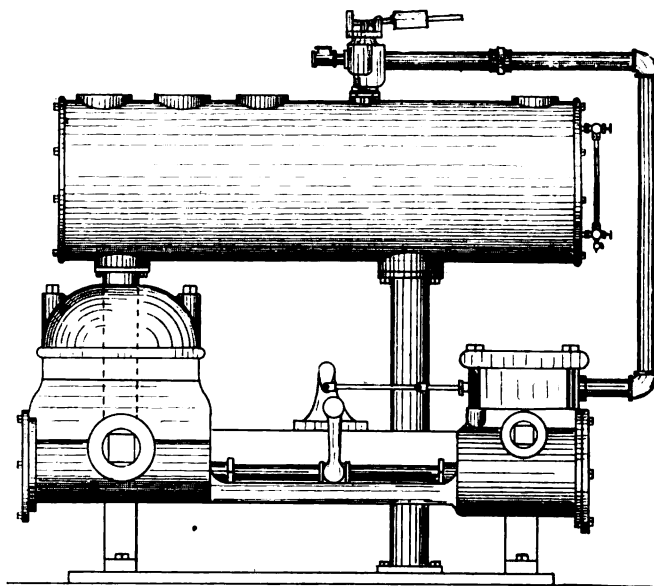


FIG 30

Fig. 30 is a 6 and 4 x 6 inch hot water pump that was taken out of a certain plant because the heating system was to be remodeled, making this machine no longer necessary. Nothing was done at that time except to shut off the steam, take out the machinery and store it in a cellar until a purchaser was found.

The usual receiver was found with this pump, but as it was made entirely of cast iron it was as good as new, for corrosion affects this material but little. However, it would have been much better to have cleaned it thoroughly and given it a coating of Dixon's Graphite Paint, both inside and outside.

Large receivers are sometimes made of wrought iron, in which case they should be scraped clean of accumulated corrosion once each year and given a coat of paint as above mentioned.

(To be Continued.)

BEN FRANKLIN DIPLOMACY

Contributed by the Philadelphia Branch of the
Joseph Dixon Crucible Company

Diplomacy has been defined as "the art of stealing a man's pocket-book and then explaining the matter so satisfactorily that he voluntarily hands over his watch and chain." But seriously, there is no question as to the value of diplomacy as the means of avoiding a vast deal of unpleasantness to both parties to a discussion; and, in fact, in these days diplomacy has such an important bearing upon the relations between nations, between business institutions, and between individuals in private life, that it is looked upon as one of the fine arts. We can therefore read profitably the following extract from the autobiography of Benjamin Franklin (a past master in the art of diplomacy), pertaining to his experience with a member of the Pennsylvania General Assembly who opposed him in his candidacy for the office of clerk to that body:

"I did not like the opposition of this new member who was a gentleman of fortune and education, with talents that were likely to give him in time great influence in the house, which indeed afterwards happened. I did not, however, aim at gaining his favor by paying any servile respect to him, but after some time took this other method. Having heard that he had in his library a certain very scarce and curious book, I wrote him a note, expressing my desire of perusing that book, and requesting that he would do me the favor of lending it to me for a few days. He sent it immediately, and I returned it in about a week with another note, expressing strongly my sense of the favor. When we next met in the house, he spoke to me (which he had never done before), and with great civility, and he ever after manifested a readiness to serve me on all occasions, so that we became great friends, and our friendship continued to his death. There is another instance of the truth of an old maxim I had learned, which says, 'He that has once done you a kindness will be more ready to do you another than he whom you yourself have obliged.' And it shows how much more profitable it is prudently to remove than to resent, return and continue inimical proceedings."

LOST A GOOD ORDER

Because the Fountain Pen Salesman Preferred a Dixon Pencil
to a Fountain Pen

William J. Bryan, on his last visit to New York, declined to answer one of a Washington correspondent's questions.

"I shouldn't know my business if I answered such a question as that," said Mr. Bryan, smiling. "Every one must know his business; otherwise failure follows; and I'm sure you wouldn't want me to fail like the young salesman of fountain pens.

"There was, you know, a young fountain-pen salesman who, to his great joy, succeeded on his first trip in persuading a stationer to order 500 pens. But all of a sudden the stationer's manner changed to the young man.

"I countermand that order," he barked, and hurried into his private office, slamming the door behind him.

"Later in the day his bookkeeper said to this stationer:

"May I ask, sir, why you so suddenly countermanded your order for those fountain pens?"

"The young salesman," the other answered, 'booked my order in lead pencil.'"—*Washington Star*.



Keeping the Runabout Running About

In some respects the motor car is like the human body. If properly cared for it will give continued service and remain free from ills. If neglected, consciously or unconsciously, trouble is sure to result.

One of the most essential items is the lubrication of your car. Good lubrication is more vital than gasoline; for while the car cannot run at all without gasoline, it runs to destruction without proper lubrication.

And now enter Dixon's Graphite Motor Lubricants. There are some half dozen of these—the Dry Ticonderoga Flake, branded "Motor Graphite," and a number of graphite greases for transmissions, bearings, and so forth.

Dixon's Flake Graphite, you know, is unaffected by heat or cold, and increases efficiency of all oils and greases. We haven't space to tell you all about it here, but write for booklet G-190, which tells how to keep the runabout (touring car, too) running about.

You may find some hints worth having.

**Joseph Dixon
Crucible Co.,
Jersey City, N. J.**



American Street and Interurban Railway Association Convention,

Atlantic City, October 12-16, 1908.

DIXON AT THE STREET RAILWAY CONVENTION

The Joseph Dixon Crucible Company's headquarters were found at spaces 516-518, Machinery Hall, near the entrance.

The Steel Exhibition Building, which was in use at the Conventions held during the Summer, was located out in the open, beyond the Marine and Amusement Hall, and contained a large picture showing the Dixon Company's well known plant in Jersey City, N. J. This steel exhibition building is an example of the wearing quality of Dixon's Silica-Graphite Paint and its adaptability for seashore property.

In their space in Machinery Hall were shown photographs of well known railway bridges indicating the use of Dixon's Silica-Graphite Paint for structures of this class,—structures on which Dixon's Paint has given service of seven years and longer were shown.

The Lubricating Department of the Joseph Dixon Crucible Company was also well represented, and graphite products of various descriptions were exhibited.

In graphite lubrication the Dixon Company are conceded to be the leaders. It has been proven by actual tests and experiences that friction losses are much reduced when oil or grease has incorporated in it the correct proportions of Dixon's Ticonderoga Flake Graphite. To meet the many requirements of the street railway systems the Dixon Company offer a full line of graphite greases, which contribute to "quiet and ease," as well as insuring the highest economy.

DIXON'S No. 8815 GRAPHITE GREASE

Dixon's No. 8815 Graphite Grease is really a cup grease, but it has special qualities and special uses, and we class it separately. It possesses a remarkable degree of resistance to heat, although its consistency is such that even at ordinary temperatures it will feed readily through a compression grease cup.

It is particularly valuable for lubricating bearings, spindles, cams, etc., of gas engines, where the heat radiated from the cylinders liquifies ordinary greases so rapidly that they waste away without doing useful work.

Sometime ago our Philadelphia branch received an order for this grease from the Trumbull Street Pumping Station, at Washington, D. C. It was found preferable to any other cup grease on account of its heat-resisting qualities, and in fact superior to any other grease that had been tried at that station, and about all of the well known greases had been faithfully tried.

The Trumbull Street Pumping Station is, as some of our readers may be aware, the finest of its kind in the world.

There is also used at this station with the greatest satisfaction Dixon's Flake Graphite, Dixon's Silica-Graphite Paint for boiler fronts, and other of the Dixon Products so very useful for power plants.



HOTEL CHELSEA, ATLANTIC CITY

One of Atlantic City's most noted hotels is the Chelsea. It is a modern structure facing the boardwalk. All metal parts of this building are painted with Dixon's Silica-Graphite Paint.

Four years ago we received the following letter from J. B. Thompson & Company, the hotel owners.

HOTEL CHELSEA, ATLANTIC CITY, N. J., Nov. 1, 1904.

Joseph Dixon Crucible Company

GENTLEMEN:—I have used Dixon's Silica-Graphite Paint on the roof of the Hotel Chelsea. I find it a durable paint, and believe it is the best material purchasable for the protection of metal exposed to the salt air and the severe conditions prevailing along the coast.

Yours truly,

(Signed) J. B. THOMPSON & Co.

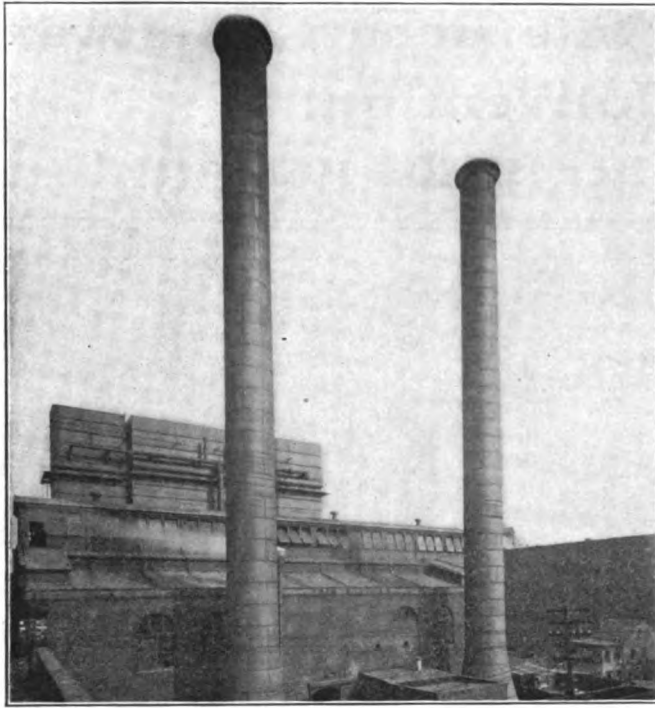
We are now in receipt of their orders for the paint required in repainting the metal roof. The owners are pleased with the present appearance of Dixon's, which looks well in spite of the severe conditions prevailing along the sea coast.

Dixon's Silica-Graphite Paint still maintains the reputation, long established, as the best possible coating for metal surfaces exposed to the conditions prevailing along the sea coast.

THE general air brake inspector of one of the leading lines advises us that Dixon's Air Brake and Triple Valve Grease is being tested out in the brake cylinders of one of their special trains and unless some trouble is encountered with the brakes on the train, he does not intend to remove the cylinder heads until six months have elapsed.

This is due to the fact that Dixon's Air Brake and Triple Valve Grease has been used on the same road with much satisfaction and if the present test gives the desired result Dixon's grease will be adopted in place of all.

THE HIGHEST mine in the world is the Santa Barbara, Bolivia, South America, which is at an altitude of 18,000 feet above sea level.



STACKS OF PHILADELPHIA RAPID TRANSIT CO.

Stack painting is a necessity, but you spare the expense of very frequent painting, by selecting a protector that has been *proved*.

The ordinary paint is of little use for stack protection and money spent for such materials is only wasted.

If durability records indicate a paint's merit, *Dixon's Black* as a protective coating for heated surfaces is certainly in the first rank.

Evidences of the remarkable durability of Dixon's Silica-Graphite Paint are found in almost every locality.

The picture shows the stacks on one of the power houses of the Philadelphia Rapid Transit Co. A service of five years in this instance, is only one of thousands of similar cases proving the economy of Dixon's Silica-Graphite Paint. The Philadelphia Rapid Transit Co. also have other stacks painted with *Dixon's Black*, and they tell us the same excellent satisfaction has been derived whenever this material has been used for their stacks and power houses, all of which are painted with Dixon's Silica-Graphite Paint.

In every case our statements regarding the success of Dixon's Silica-Graphite Paint are backed by *time tests*.

THE CAUTIOUS DRUMMER

The statement is made that the commercial traveler is considered by insurance companies a first-class risk. The reasons given are:

1. He is generally on the road and the railway train has been proven to be the safest place a person can be in.
2. He is a cautious person and generally selects a middle seat in a car about the center of the train—no last cars or first cars for him. If there is a Pullman he selects that not for its greater luxury, although he is not adverse to that, but because of the better construction and greater strength of the Pullman.

DIXON'S graphite publications sent free upon request.

GRAPHITE IN THE POTTERIES

(STAFFORDSHIRE)

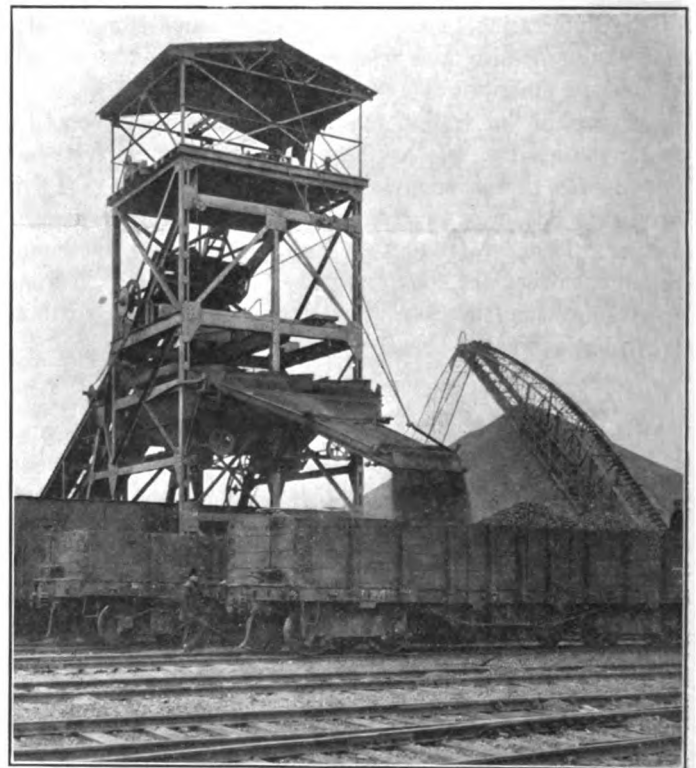
One of the latest methods of firing pottery is with the continuous firing kiln. This kiln is circular and has but one firing place. The ware to be fired is put in small cages or trucks and these are placed on a circular tramway in the kiln which is rotated by spur gearing.

Each cage of crockery in turn gradually comes to the heat, has its allotted time over the fire and then as gradually cools down again before reaching the entrance to be replaced by another cage of unfired ware.

The trams or cages on this tramway require lubricating at the ball bearings. Oils or greases are useless. Under the severe conditions of heat and friction we have found nothing to answer the purpose like Dixon's Flake Graphite.

—*Brayshaw's Stoke.*

A FRIEND was talking with a crazy woman when a stingy man passed by. "Do you see that man," she said, with a cunning smile, "You could blow his soul through a humming bird's quill, into a mosquito's eye, and the mosquito would'nt wink."—*Sunday Magazine.*



P. & R. R. R. CO'S COALING PLANT

Contractors, Dodge Coal Storage Co., and Link Belt Engineering Co. of Philadelphia, Pa.

In the Philadelphia & Reading R. R. Company's coaling plant in Norristown is one of the many evidences of the economy in protecting structures of this class in the best possible manner with the best possible paint. When first built, nearly five years ago, all iron work of this kind was painted with Dixon's Silica-Graphite Paint, which is today in first class condition. The plant is too large to have one photograph do justice to it, but the cut shows a small portion of the plant and gives some idea of the class of construction.



ELK RIVER BRIDGE, ELK RIVER, MINN.

The bridge shown in the above picture was built in the early part of 1905, and painted with Dixon's Silica-Graphite Paint (two coats).

The paint, after three years service, is found to be in perfect condition and offering true protection to the metal, and from present appearance the bridge will not require repainting for a number of years.

Time tells. As a standard coating for bridge work, Dixon's Silica-Graphite Paint has been *proved* by 45 years of actual use.

AN ENGINEER'S VIEWS ON PIPE-FITTING— MAKING JOINTS

By H. H. YATES.

Right here is a point I want to emphasize. Always when making any kind of a joint, be sure that the joint can be parted without breaking the fitting or the man doing the repairing. Some men act as if the "dope" cost \$1 a pound and they had to pay for it, others use any old thing that is handy and assists in making a tight joint, without any thoughts of the man making repairs.

I always use considerable graphite in making joints. Either red or white lead, with a proportion of graphite mixed with it, is good, or even boiled linseed oil and graphite alone is good. A ready mixed preparation, consisting largely of

graphite, which is manufactured by the Joseph Dixon Crucible Co., comes in friction top cans and is very convenient and economical.—*Practical Engineer*.

The above article appeared in the Oct. 1, 1908, issue of the *Practical Engineer* and illustrates the sentiments of a practical writer toward men who make steam-tight joints without paying proper regard to the time when repairs may have to be made.

Dixon's Graphite Pipe-Joint Compound is the most economical one that can be used, pound for pound it is more bulky than either red or white lead, and because of the lubricating qualities of graphite the joint may be taken up a turn or a turn and a half tighter than with other compounds without straining the tools or injuring the connections.

We will be pleased to send samples to any one who is not acquainted with Dixon's Graphite Pipe-Joint Compound.

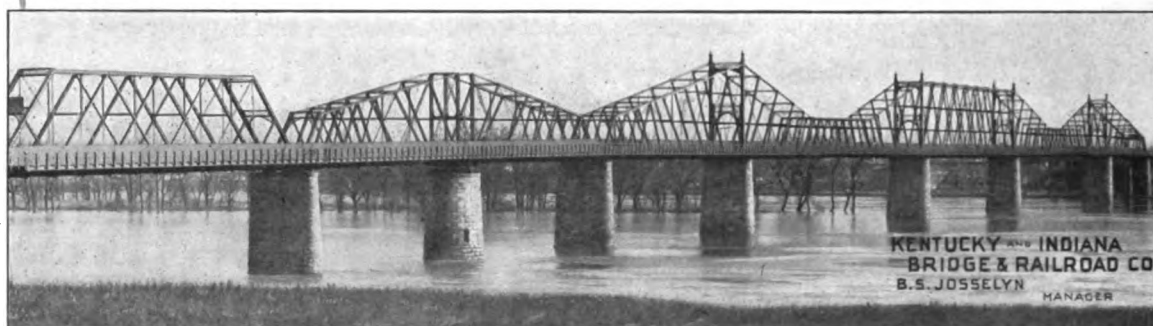
"Have ye anny ancisthors, Kelly?"

"An' phwat's ancisthors?"

"Why, people you sphrung from."

"Shprung from, begorra! The Kellys shprung from nobody. They shprung at thim!"—*The Outlook*.

ONE THING never completely displaces another; gun flints, according to a daily paper, are still manufactured in England at the same quarries where they have been produced since the beginning of English history.



The structure shown above is one of the many evidences proving the remarkable durability of Dixon's Silica-Graphite Paint. The following letter has been received from our customers, who express their entire satisfaction with the results given by Dixon's Silica-Graphite Paint.

KENTUCKY & INDIANA BRIDGE AND RAILROAD CO.,
KENTUCKY AND INDIANA BRIDGE,
LOUISVILLE BELT LINE,
NEW ALBANY AND PORTLAND FERRY.

LOUISVILLE, KENTUCKY, Sept. 28, 1908.

Joseph Dixon Crucible Company

GENTLEMEN:—Replying to your letter of the 23rd inst., relative to the application of your Dixon Silica-Graphite Paint on our Ohio River bridge at this point, I am pleased to say that this paint is still in very good condition, very few places showing any signs of rust.

We gave our overhead structure one good coat of your paint about seven years ago, after thoroughly scraping and cleaning same, and we can cheerfully state that your paint is the best ever put on our bridge.

Yours very truly,
(Signed) W. M. MITCHELL.
Manager and Engineer.

DIXON'S FLAKE GRAPHITE AS A LUBRICANT FOR ELECTRIC STREET RAILWAY WORK

The Joseph Dixon Crucible Company prepare for street railway use many different graphite lubricants which the system demands. These lubricants have all been compounded after years of scientific research and practical tests. The Dixon Company's greases, besides having all the advantages of the best mineral oils, have the added advantage of having incorporated in them the correct proportions of Dixon's celebrated Ticonderoga Flake Graphite, making possible the highest efficiency and economy of operation, "contributing to quiet and ease," as well as long life.

DIXON'S GRAPHITE CURVE GREASE

This grease is prepared particularly for heavy work, easily applied and durable. It has been found to give a big saving when used, as the labor of application is much less and thus the danger of accidents to workmen lessened, an important factor where there is a big movement of trains.

DIXON'S AIR BRAKE AND TRIPLE VALVE GREASE

This grease has been officially adopted by many of the trunk lines as their standard air brake and triple valve lubricant.

As the function of flake graphite is to fill up the minute irregularities, or pores of the metal, a graphite veneer-like coating of marvelous smoothness is built up and instead of the metal parts being directly in contact with each other, there is a graphite to graphite contact, thus the tendency to quick action (undesired) is reduced to a minimum.

Dixon's Air Brake Grease can be used throughout the whole air brake system and when used upon the engineer's valve, results in its working very much easier, the same regards angle cocks.

This grease is unaffected by climatic conditions, giving as good service in Winter as in Summer, and the same good service in a moist and dry country.

The grease will last a great deal longer than the average lubricant, making frequent lubrication unnecessary.

Dixon's Air Brake and Triple Valve Grease has withstood the severest tests successfully and is now the adopted standard triple valve lubricant upon many railroads.

If any railroad wishes to make test for verifying the above statements, we will be pleased to furnish the samples.

DIXON'S WATERPROOF GRAPHITE GREASE

A grease which is waterproof and one which is especially adapted for drawbridges, cables, switch boxes, enclosed gears, etc. It is unaffected by acid or alkali waters.

DIXON'S WOOD GREASE

Composed of cedar wood fiber, mineral oils, and flake graphite. The wood fiber cushions the gears, prevents them from being in actual metallic contact because of its cushioning effect, and the flake graphite forms a high polish on the gears. The fiber has a strong absorptive power for oils and prevents their dripping and wasting away.

ANGELS WITH STINGERS

A little Cleveland tot of three years was put to bed, her first night in New Jersey, by her mother, with the words, "now go to sleep, darling, and remember the angels are flying about your little crib and keeping you from harm." A few minutes later the patter of little feet was heard and a little, white robed figure emerged from the bed-room. "Why darling, what's the matter?" said the mother. "I don't like the angels, sobbed the little girl. "Why, dearie, why not?" "One o' th' angels bit me."

'Tis easy enough to be pleasant
When life flows along like a song,
But the man worth while is the man who can smile
When everything goes dead wrong."



HOBOKEN ELEVATED STRUCTURE

It was the Dixon Company's pleasure to be represented at the convention of the American Street and Interurban Railway Association at Atlantic City, in the month of October, and many of our callers told us they were looking for the best methods of bridge painting. Most of our visitors, however, knew all about Dixon's Silica-Graphite Paint, and over two hundred Street Railway Representatives who registered with us, told our representatives of the adoption of Dixon's Silica-Graphite Paint by their companies for the maintenance of bridges, and not a few spoke of the remarkable service Dixon's Silica-Graphite Paint is rendering not only for their bridge work, but also their poles, stacks, power houses and car barns.

In the above picture, we show a well known street railway viaduct—the Public Service Corporation's Elevated Structure in Hoboken, New Jersey—an example of durability. Two coats of Dixon's Silica-Graphite Paint having given a service of over seven years.

DIXON'S GRAPHITE BRUSHES GIVE GOOD RESULTS

The Dixon Graphite Brush is continuing to give its many users most excellent satisfaction. It is made in only one grade, and while we do not claim it will be satisfactory for all conditions, we will be pleased to advise as to whether or not in our opinion we think the conditions adapted for its use.

The brush being composed largely of graphite, is a lubricating brush, and when used all squeaking disappears and the commutator takes on the dark brown appearance so much sought after by electrical engineers.

We have received many pleasing letters regarding the behavior of our brush and are glad to add the following.

NASHVILLE, TENN., Sept. 20, 1908.

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

GENTLEMEN:—Replying to your request for an expression of opinion regarding your graphite brushes, I desire to say that your brushes have given us entire satisfaction, and I desire to cite one particular instance we had in our plant—a

small D. C. Generator used for an exciter. From the very beginning this machine gave us a great deal of trouble from sparking at the brushes. We were constantly turning off the commutator but the trouble continued. Finally I purchased from one of your representatives some of your graphite brushes, we put them on the machine and the effect was wonderful. The machine ran absolutely sparkless and has continued to do so to date. (These brushes have run about four months.)

Yours truly,

(Signed) PENTECOST, Supt. Elec. Light Dept.

COULDN'T LOSE HIM

A "Big Indian" strayed away from his camp and got lost. Inquiring the way back he was asked: "Indian lost?" "No," said he, disdainfully, "Indian no lost—wigwam lost." Striking his breast, he exclaimed, "Indian here!"

TIMELY MUSINGS

The following sent us by the Denver Fire Clay Company shows philosophy, Western breeziness and confidence in itself and its goods.

Did it ever occur to you that a man's life is full of crosses and temptations? He comes into this world without his consent and goes out against his will, and the trip between the two is exceedingly rocky.

When he is little the big girls kiss him and when he is grown the little girls kiss him. If he is poor he is a bad manager, if he is rich he is dishonest. If he needs credit he can't get it, if he is prosperous every one wants to do him a favor.

If he doesn't give to charity he is a stingy cuss; if he does it's for show. If he is actively religious he is a hypocrite, if he takes no interest in religion he is a hardened sinner.

If he gives affection he is a soft specimen, if he cares for no one he is cold-blooded. If he dies young there was a great future before him, if he lives to an old age he has missed his calling.

The road is rocky, but man loves to travel it, and after all there is a good deal of satisfaction if he and his family are patrons of and boosters for THE DENVER FIRE CLAY COMPANY.

WE HAVE taken from *American Industries* an article by Henry Clews, the well known lecturer and financier. It will be found elsewhere in GRAPHITE. The article should be carefully read by every manufacturer.

A surplus properly invested means that a manufacturer, when need comes, is enabled to borrow money practically without interest. Where there is a cash reserve the manufacturer is enabled to take advantage of all discounts offered, and frequently may be able to buy at a lower figure for cash down. It is, as Mr. Clews puts it, "the business life insurance policy."

DIXON'S graphite publications sent free upon request.



THE APHTHORP APARTMENTS, BROADWAY & 78th STREET, NEW YORK

CLINTON & RUSSELL, Architects JOHN DOWNEY, Building Construction J. B. & J. M. CORNELL, Steel Contractors
DIXON'S SILICA-GRAPHITE PAINT USED FOR MILL AND FIELD COATS

Conveniences for promoting the physical comfort in house-keeping apartments and interior finish to satisfy the aesthetic taste of the most exacting have been combined in the Aphthorp, 78th Street and Broadway, in a manner that almost defies criticism, says the *Record and Guide*. That the head of a family drawing a salary of \$6,000 a year could not pay even the rent of one of the choicest suites of rooms in this attractive creation in architecture is interesting, but the devices introduced to make the inventive genius of man supply the needs of modern life are doubly interesting. To have ice whenever desired, without an ounce being brought into the apartment; to mail one's letters without going ten steps from the outer door of any floor; to have well furnished rooms under the same roof for guests whom one might be unable to accommodate and extra servants provided by the management; to have one's apartment isolated and yet on two floors, or a "duplex apartment"; to eliminate the possibility of explosion in the gas range by a novel arrangement in setting the pipe that carries off the odors; these are but a few of the improvements adopted in the erection and completion of the Aphthorp and account in a measure for the rents, which run as high as \$6,500.

The two features which impress one before entering the structure are first, its massive appearance from the street, and, second, the beautiful court in the center of the site. An archway, providing a carriage entrance, about twenty feet wide, pierces the central part of the Broadway and West End Avenue sides and leads into the court, 134 feet long and 95 feet wide. In the center of this is a display of horticulture that would grace a botanical garden, and around this, in turn, is the driveway. It will thus appear that those residing in the Aphthorp do not descend from their conveyances until they are entirely excluded from the street.

The interior is a marvel of beauty and comfort. Immediately under the court is a service driveway, with entrance on 79th Street. By means of this delivery wagons proceed directly into the basement, stop opposite one of the four service elevators, and leave the building by driving around the center of the floor. In the basement, also, are the huge refrigerating plant, eight filters and all of the latest contrivances designed for such a structure. The refrigerating plant is duplicated so that if there should be an unavoidable breakdown of one machine, there is no interruption to the supplies.

THE WORKING VALUE OF A SURPLUS

Surplus, says Henry Clews in *American Industries*

Surplus to the manufactory is what seed and fertilizer are to the farmer—it is the business life insurance policy. A concern that has stock to sell, and that is really a stock jobbing enterprise, will vote its surplus into the dividend; but the intelligent investor will be more impressed with a wholesome reserve than by forced premiums.

The amount of surplus that a concern should keep on hand must naturally be regulated by the nature of its work, the amount of capital invested, and the average cost of operation as figured during ordinary periods. There are several qualifying conditions. The greatest of these is hazard, the degree to which the element of chance enters into the undertaking. The possibility of great loss is a feature that must be considered in the conduct of many legitimate industries, and the manufactory that has this question confronting it must carry a heavy percentage of reserve, even at the cost of expansion and increased facilities, if they would have a long life and a healthy one. Collection may be rated as the next qualifying circumstance. Many industries, from the very nature of the business, are compelled to devote much of their energy to a single order that may take several months to complete, and upon which they will receive no payment until the goods are delivered. In contrast with this, there is the house that produces wares that sell in small quantities through hundreds and thousands of jobbers, and who usually remit within thirty days, often ten days. The surplus needed by the first company, to provide against delay in either the filling of a contract or the payment by the customer, must be many times that of the second concern that is receiving remittances by every mail and where the delay or failure of one or a dozen customers to pay will have little effect. To these conditional features may be added another, that of movement. This relates to the "seasonable" business. This style of industry may not have to reckon with the problems just mentioned, their orders may not take long to fill and if the majority of their customers pay promptly they will not feel the holding back of a few—but for all this they must carry a large surplus. A business that is active at only certain seasons of the year must be prepared to meet long "dry spells." Provision must be made for not only the "off" months, but sufficient reserve must be kept in hand to meet all possible conditions that may arise at the beginning of the next time of activity and before collections have started to come in from the sales made months before.

A bank must have something stronger than faith in its customers before it can serve them to the best advantage. No industry may advance to any prominent position without the aid of at least one bank. And the bank, to be able to render the proper service, must be sure of the strength of the customer. Bankers are often questioned regarding their depositors when the depositor knows nothing of it, but the result of such an interview may have a most positive effect on the earnings, and even on the standing of the business under discussion. A banker may say that he believes a concern safe though it is negligent regarding the amount of reserve it maintains; but how different will be his tone when he knows that year after year, as the business has grown, the surplus has been increased in proportion. There are so many ways

in which a bank may and will help the industry in which it has confidence. There are times when the state of trade is such that it demands of the business an important outlay to provide for natural increase. New buildings or new equipment, or both, are actually necessary to meet conditions and to provide against competitors securing all the new business and finally a monopoly. You might perform this work by hypothecating the reserve and finessing gross receipts; but you will go down on the bankers' doubtful list. A better plan would be to have your banker negotiate a bond issue and thereby keep your surplus even.



The Salesman Uses Dixon Pencils

There are at least a half dozen Dixon pencils that have found favor with the salesman. All of them have good leads, sharpen easily, do not break readily—and they write good orders too.

Perhaps Dixon's *Eterno* and the new companion pencil, *Endurance*, are the most popular. Both are indelible pencils and take the place of pen and ink. The *Endurance* is a little harder than the *Eterno*, and is therefore used where carbon duplicates are wanted—try both.

JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J.

BACK TO SCHOOL

This thing of goin' back to school is not so awful bad,
Outside I growl like everything, inside I'm sorta glad.
When every day's a holiday it don't seem very grand,
But when we git a ha'f a day we yell to beat the band.
The boys are all together now, an' we can make up games,
An' play at somethin' that's worth while instead of callin' names.

The fights we had in summertime are done an' clean forgot;
The boy that licked us hardest, our chum is like as not.
The gangs of all the neighborhood are blended into one,
An' at recess an' after school, unite in all the fun.

Another thing: in goin' back I get a teacher new,
An' though I like her in my heart, I keep my likes from view.

I have some joy in knowin' that there's some one boss, you see—

The teacher that is "easy" can't git no respect from me.
She may be strict, but if she's square, with kindness in her eye,

She can lead me through ol' Jordan's stream, I'll follow wet er dry.

I know I git cantankerous an' growl an' look real black,
But underneath my left fifth rib I'm glad that I am back.

—JOHN L. SHROY.

GREATEST YEAR IN AMERICAN SHIPBUILDING AND WHAT IT MEANS

American shipbuilding established a record in the twelve months ending with June 30, 1908, just as we predicted last winter, the total output in the United States during that period being 588,627 gross tons. The nearest approach to this record occurred over fifty years ago, in 1855, when our builders produced 583,450 tons; since that remote day these figures have stood as the banner years in our history.

The difference between the product of 1855 and that of to-day is great. Then the bulk of the vessels launched were intended for the foreign trade, for routes all over the world, the domestic side of the output being only a fraction of the whole. Last year practically every ship launched was for domestic trade; few if any will ever engage in business taking them to ports outside of the United States. We thus find the present situation in the shipbuilding field a natural development of domestic construction and a marked contrast to the production of ships in the year 1855. If we had continued to produce foreign-going ships each year since the middle of the century just past in proportion to the amount of vessels operated exclusively in home waters, we would to-day be able to show an output of tonnage four or five times as great as that which is set down to our credit during the year which has just been concluded. It is a triumph for our domestic commerce on rivers, lakes and sea coast, but a sorry showing for that greater field, the trade of the oceans of the world.

—*The Nautical Gazette.*

BIRDS of a feather don't always flock together, especially when one is dead and hanging up in a cornfield.

Productions of the Dixon Crucible Co.

Dixon's Black-lead Crucibles and Retorts, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

Dixon's Brazing Crucibles, made in several shapes for dip-brazing.

Dixon's Graphite Boxes and Covers, for baking carbons and filaments for electric lighting.

Dixon's Fine Office and Drawing Pencils, unequaled for smooth, tough leads and uniformity of grading.

Dixon's Colored Crayons, in wood or solid. For schools, railroads, editors or factory.

Dixon's Lumber Leads, black or colors; for green or dry lumber.

Dixon's Metal Workers' Crayons.

Dixon's Felt Erasive Rubber, for erasing pencil marks, typewriter work or ink.

Dixon's Carburet of Iron Stove Polish, the old reliable; in cake.

Dixon's Pure Flake Lubricating Graphite, a solid lubricant for all frictional surfaces.

Dixon's Special Graphite No. 635, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

Dixon's Electrotyping Graphite, used by the majority of practical electrotypers of this country.

Dixon's Hatter's Lead, for coloring hat bodies.

Dixon's Plumbago for Shot Polishing.

Dixon's Plumbago for Powder Glazing.

Dixon's Plumbago Foundry Facings.

Dixon's Yacht Plumbago, for lubricating and smoothing bottoms of yachts.

Dixon's Graphite Waterproof Grease, for gears, wire ropes, hoisting chains and general machinery.

Dixon's Graphite Axle Grease, for trucks, wagons, carriages.

Dixon's Graphited Wood Grease, for use on trolley car gears which are enclosed in a gear case.

Dixon's Graphited Oil, for use in all places where the use of a gear grease is impracticable.

Dixon's Graphite Cup Greases, for use in cups or open bearings, on spindles, shafting, etc.

Dixon's Oiled Graphite,

Dixon's Lubricating Compound No. 688, for enclosed gears of electric automobiles.

Dixon's Silica-Graphite Paint, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

Dixon's Graphite Pipe-Joint Compound, for steam, gas and water piping, smearing gaskets and flanges.

Dixon's Automobile and Bicycle Lubricants.

Dixon's Graphitoleo, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

Dixon's Commutator Graphite, will glaze commutator with the finish so much desired by electrical engineers.

Dixon's Graphite for Type Setting Machines.

Dixon's Graphite for Talking Machines.

Dixon's Motor Chain Compound, for transmission chains.

Dixon's Crucible Clay and Graphite Mixture, for lining and repairing fire boxes.

Dixon's Stove Cement, for repairing stove or range lining.

Dixon's Traction Belt Dressing, for leather belts.

Dixon's Solid Belt Dressing, convenient for those who prefer a solid dressing.

Dixon's Graphite Resistance Rods, from one-eighth to one inch diameter; any resistance required.

Dixon's Graphite Brushes, for motors, dynamos and generators.

Dixon's Graphite Products for Electricians.

Special circulars with detailed information sent on request.

GRAPHITE

VOL. X.

DECEMBER, 1908.

No. 12.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regards to the different forms of Graphite and their respective uses.

COPYRIGHT, 1908, BY JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

THE EVER ALIVE DIXON COMPANY

Although it is always in evidence in GRAPHITE, permit us, please, to repeat it here that the Joseph Dixon Crucible Company was established in 1827 and incorporated in 1868.

Over four score years of active business life and over two score years of incorporation!

This means much. It means that Joseph Dixon was the founder of the graphite industry and that his successors perpetuated his name in the incorporation of the Joseph Dixon Crucible Company. It means long and busy years during which the Dixon people have been educating the people of the entire world in the use of graphite and graphite products.

The result of that work is, that at

the present time Dixon's graphite productions are well known in every civilized part of the world—and in many places where civilization has not made any marked progress.

In several distant foreign countries Dixon's Stove Polish and Dixon's Lead Pencils have been counterfeited and imitated, while here in the land of the free and the home of the brave imitation and counterfeiting of the Dixon products has frequently caused us to take up the "big stick" and get after them.

Four score years of age has given to the Dixon Company what time gives to a great city—a ripeness, an experience, a power and a force not otherwise obtainable.

Never has the Joseph Dixon Crucible Company been so well equipped in its productive power and in its selling force as at the present time, and never has the company felt younger; in the future it will set the standard and the pace in the graphite line, as it always has in the past.

OUR NEW GARB

Probably the first thing you noticed upon opening GRAPHITE was the title piece. This is based upon the original one but is more artistic, and shall we say, developed—more in keeping with the progress and development of GRAPHITE itself.

The Anniversary Number was thought to be the appropriate one in which to inaugurate the change.

GETTING READY

During the past year readers of GRAPHITE have undoubtedly observed the photographs reproduced showing the several large additions to the Dixon plant.

We have added to the crucible factory 41,050 square feet; to the pencil factory 28,395 square feet; to the pencil leads and crayon works 26,200 square feet. A total of 95,645 square feet. All this means that the Dixon Company have had confidence in the speedy return to prosperity and are going to be ready for increased business and the prompt filling of orders when we land there.

Beginning with June business has steadily improved, and every indication points to fine business for the year 1909—and on.

PLEASANTRY IN BUSINESS

GRAPHITE from time to time has contained interesting letters received by the Dixon Company. The following is one received by one of the Dixon salesmen, and as it speaks for itself, no further comment is needed. For good and sufficient reasons names are omitted.

"I am sending you today by express a crucible which broke in the middle after we got through using it, and thought it was a very good specimen indeed to show how the crucible wore.

"Now, this crucible did not fail in the fire, but was flung out on account of being worn out. The same was run 67 heats, and was in good shape, as far as being sound, when flung out.

"Now, do not get a 'swelled' head on account of these crucibles running so many heats, as we can take any old crucible and run them just as long as yours.

"We simply mention this so that when you call to see us you will not want to boost the price up on account of the number of heats they are run.

"All the girls in the office have got their heads high in the air listening to this letter being dictated to you, and I think if a photographer were here he certainly could get a pleasant looking picture. They all join in sending their love as usual to you.

"I have simply added these few bottom lines so that you cannot use this letter as a recommend to other people to sell Dixon Crucibles."

To paraphrase the Washburn-Crosby slogan, "When you think of graphite, think of Dixon." And remember that the Dixon name stands for longest and widest experience in the graphite industry.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

OFFICERS:

President—EDWARD F. C. YOUNG,
Vice Pres.—GEORGE T. SMITH,
Treasurer—GEORGE E. LONG,
Secretary—HARRY DAILEY.

DIRECTORS:

EDWARD F. C. YOUNG,	WILLIAM MURRAY,
GEORGE T. SMITH,	EDWARD L. YOUNG,
GEORGE E. LONG,	HARRY DAILEY,
WILLIAM H. CORBIN.	

BRANCH OFFICES:

NEW YORK SALESROOM, 68 Reade Street.
PHILADELPHIA SALESROOM, 1020 Arch Street.
SAN FRANCISCO SALESROOM, 145 Second Street.
CHICAGO OFFICE, 1324 Monadnock Block.
BOSTON OFFICE, 636 John Hancock Building.
PITTSBURG OFFICE, 2213 Farmers' Bank Building.
ST. LOUIS OFFICE, 501 Victoria Building.
WASHINGTON, D. C., OFFICE, 925 Colorado Building.
BALTIMORE OFFICE, 1005 Union Trust Building.

TEN YEARS AFTER

In December, 1898, there appeared an unassuming little sheet of four pages and at the top of the first page was printed the word, GRAPHITE. It is related how one of the Dixon branch managers after seeing the first number said: "Very fine, but you can't keep it up." This, however, was a judgment of the moment and ten years ago even our most sanguine anticipations did not do GRAPHITE justice.

From 1898 to 1903 GRAPHITE remained a four page paper with a few exceptional issues. 1904 saw GRAPHITE grow to eight pages, then twelve. Now we have difficulty in keeping it at twelve and occasionally break out with sixteen or twenty pages.

We believe that GRAPHITE has also advanced in quality due to the co-operation of our branch offices, representatives, and readers. All of these have kept us posted on matters that came under their observation that were appropriate for GRAPHITE.

Many public libraries have requested us to send them GRAPHITE. Today this publication will also be found in the technical libraries of some of our colleges and schools, and in the reading rooms of many engineering societies. Altogether we print and distribute about 15,000 copies of GRAPHITE.

We recently sent out some Post Cards to a portion of our subscribers' list to be returned with any change of address or expression of opinion. Out of some 3500 Post Cards not a dozen were returned with the request that GRAPHITE be discontinued. Some were complimentary to the point of writing us letters and one of these we reproduce.

FOUR CORNERS FARM,
HIGH GRADE DAIRY PRODUCTS,
EDWARD E. REYNOLDS, Proprietor.

October 13, 1908.

Joseph Dixon Crucible Company,
Jersey City, N. J.

GENTLEMEN:—Replying to your recent card of inquiry as to GRAPHITE, would say that you began sending it to me several years ago when I was Associate Professor of Experimental Engineering at Purdue University under Dean W. F. M. Goss.

I have now become a "Clodhopper" (for definition see page 1006, October GRAPHITE), but I not only continue to enjoy GRAPHITE but am a "small consumer" of graphite lubricants and graphite paint as well.

Modern farming uses a lot of machinery, and much of it is replete with cheaply constructed bearings in which the journals are expected to run at high speed amid clouds of gritty dust and on temporary foundations, admitting of nerve racking vibration and an ear splitting racket that would make the chief engineer of an up-to-date, quiet running power plant seek safety in flight.

It's a fine thing to have a can of Dixon's Graphite Grease on hand when a hot journal on a big ensilage cutter threatens to throw twenty men and a traction engine into idleness while their pay goes on.

Yes, send me GRAPHITE, but change the address from Purdue University to R. F. D. No. 7, and oblige.

Yours truly,

EDWARD E. REYNOLDS.

We wish Mr. Reynolds every success, and if the Four Corners Farm Products are as good as his letter is clever, his success is assured.

DON'T WORRY

Mr. George T. Smith, Vice President of the Dixon Company,

Said to be a Good Example

At a meeting of the Traffic Club, Mr. W. G. Besler in his speech on "Don't Worry" said: "For instance, there is our friend George T. Smith, he is a good example of my subject. He is always smiling, and no matter how busy he is, it does not seem to bother his manners at all, because he does not worry. Sometime ago he came in my office and left a package of lubricating graphite as a recipe for overcoming friction. I found it just as smooth and free from friction as George himself is."

PREVENTING CORROSION OF STEAM MACHINERY

By W. H. WAKEMAN.

Chapter VII.

A treatise on this subject would be incomplete if it did not include a chapter on the steam turbine, as this form of steam machinery has been brought so prominently before steam users and engineers, and its development has progressed so rapidly that its history constitutes a section of engineering literature that is at once unique, interesting and instructive.

Like many other inventions which now appear as landmarks in the engineering world, the removal of which would not be permitted, the principles which underlie its operation and make the device practicable were well known long before their application was brought to a state of perfection that rendered the machines a commercial success in daily practise, but this desirable condition is now assured without possibility of failure.

So far as economy of space occupied for a given power, and peculiar adaptability to certain kinds of propulsion, either in stationary or marine work are concerned, the turbine is superior to the reciprocating engine, but when actual economy of fuel is considered, positive proof of its superiority cannot be produced, or at least it has not been presented up to the time of writing this chapter.

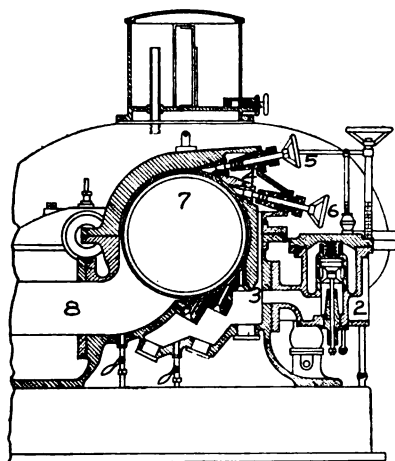


FIG. 31

Of course, it is an easy matter to produce reports of tests which show that the rotary engine is more economical in the use of coal than some specimens of its competitor of longer standing, but it is not less difficult to produce other reports which reverse these positions.

Unprejudiced consideration of the whole subject leads to the conclusion that while the steam turbine has become a fixture in the engineering world, it cannot be maintained in its prominent position by its economical operation only, as that is impossible; but freedom from vibration, high initial speed and other considerations are in its favor, all of which are important.

Steam turbines may properly be divided into three general types, as follows. First, those in which the direct force of one or more jets of steam that issue from stationary nozzles, is utilized to rotate a disk or wheel fitted with suitable buckets that receive the steam under high pressure. These are called

impulse turbines. Second, those that are fitted with a device whereby the reaction of steam jets as they issue from a rotating disk and strike a stationary part, is used to give the disk a more rapid motion, or to render its action more positive. They are known as reaction turbines. Third, a type in which the good qualities of both are combined to use the direct pressure of steam in one part, and the impact of it in another to give rapid motion and great power to the rotors and disks, consequently they are known as combination turbines.

Fig. 31 is a good illustration of the first type, as it resembles the well known Pelton water wheel, in which a comparatively small quantity of water under high pressure is discharged through a suitable nozzle into buckets securely fastened to the rim of the rotor or disk on the shaft, which is used for the transmission of power. These buckets resemble those used on conveyors or elevators that consist of an endless belt carrying the buckets that travel in a trough to elevate grain, coal, ashes, etc.

Steam under very high pressure enters the passage 2 and thence passes to 3 and 4, out of which it escapes through, nozzles that are controlled by the hand wheels 5 and 6. The steam jets so formed operate on buckets forming part of the rotor 7, which is keyed to the shaft that transmits the power developed. This process utilizes the expansive quality of steam to its full extent, after which it is discharged into the exhaust pipe 8, and thence goes to the atmosphere, or to a condenser, according to conditions.

It will be noted that the exhaust pipe is very large when compared with the steam inlet. This is a feature of modern turbines, the effect of which is to allow the steam to escape freely after its work is done. In the case of an ordinary reciprocating engine that requires a 4 inch steam pipe, a 5 inch exhaust pipe is generally considered sufficient, and 6 inches is ample for almost any conditions which can be found. This makes the outlet $1\frac{1}{2}$ times as large as the inlet in the former case, and $2\frac{1}{4}$ times in the latter. A certain turbine is supplied with steam through a 4 inch pipe, but the exhaust pipe is 18 inches in diameter. This shows that the latter is 20 times as large as the former, thus illustrating the great difference in this respect between these two kinds of steam motors.

An essential feature of the steam turbine is an exceedingly high rotative speed, consequently the centrifugal force developed in the rotor is very great, and as the buckets revolve in a greater circle than any other part, they receive the highest effect possible from this source. This makes it necessary to fasten them securely to the rotor, but these fastenings do not always remain as secure as they are when first applied, and if one is detached it usually wrecks all of the remainder in a fraction of a second.

To overcome this objection some builders cut buckets in the solid rim of the rotor. This prevents them from becoming detached, but does not decrease the wear due to friction of the steam, which is greatly increased if moisture is carried over from the boilers, especially if impurities are mixed with it. As the internal revolving parts are not in contact with stationary surfaces, it appears as if all wear would be eliminated, but this has not proved true in practise, and when these permanent buckets are worn out of shape it becomes necessary to renew the rotor, consequently anything that will prevent wear in any degree is valuable to the owners of these machines.

When steam is saturated with Dixon's Flake Graphite, ground fine to give a more perfect mixture, it moves over these surfaces with less friction than is possible without it, because the highest degree of super-heating known to modern engineering does not eliminate the lubricating qualities of this graphite. It may be used in dry form, or mixed with enough superior cylinder oil to keep it from scattering when used.

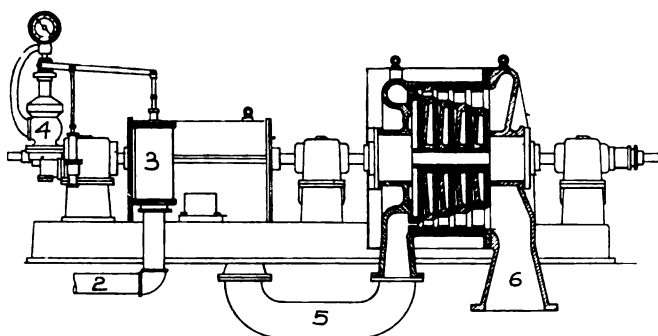


Fig. 32 illustrates a compound impulse turbine into which steam enters through the pipe 2 to the throttle valve 3 that is operated by the governor 4. After operating on the high pressure rotor it enters the receiver 5 and from thence goes to the low pressure side, to be used again as in the case of any other compound engine. It is then exhausted through 6 to a condenser in cases where great efficiency is desired, or to other devices if the steam is wanted for heating water or warming buildings.

A nearly perfect vacuum can be profitably carried on a turbine of this kind, because surfaces that are highly heated by incoming steam at high pressure, are not cooled by exhaust steam at low pressure, which is a serious defect in simple condensing reciprocating engines, and is not thoroughly eliminated from compound engines of the same type. However, it requires special apparatus for high vacuum service which increases the first cost and makes a plant more complicated.

(To be Continued.)

A RETROSPECTION

By WILLIAM J. COANE.

A retrospect of business conditions during the last decade must be a considerable satisfaction—yes, a considerable pleasure—to the heads of all healthy, well organized, well managed business institutions—representing, as it does in this country, a period of prosperity—a period of agricultural, railroad, industrial and commercial expansion—such as the world had never before dreamed of. And it is not unnatural that the Joseph Dixon Crucible Company should have a sense of gratification over its remarkable progress, which has even more than kept pace with the general development characteristic of this period, and which has compelled the almost constant employment of builders in making extensive factory and office additions.

The Dixon Company in their business of Graphite and Graphite Products, are the largest miners, importers, and manufacturers, as well as the oldest concern of the kind, in the world. The old-time famous Dixon "American Graphite" Pencils are still foremost; Dixon's Graphite Crucibles remain

the standard everywhere; Dixon's Silica-Graphite Paint is universally recognized as one of the world's greatest protective paints; and Dixon's Ticonderoga Flake Lubricating Graphite and Graphite Lubricating Greases stand higher today than ever before in the estimation of mechanical men, since they have had much opportunity to observe their relative merits alongside of innumerable imitations.

All this is true from the point of view of the Philadelphia Branch, which includes six states. And what is true of this small part of the Dixon Company's vast field, is true of the whole. To win honorable and permanent success in business, there must be a combination of high quality goods and high quality men. It is impossible long to *masquerade* under the guise of business men; and counterfeit, inferior goods must sooner or later yield to the strain. The great growth of this business since its establishment in 1827, and especially its rapid expansion during the past ten years, attest the high and progressive quality of the Dixon Company's management, and the fact that their products are "Marathon" winners.

An important feature in the progressive management of the Dixon Company has been their policy of publicity, which embraces the monthly publication of this paper GRAPHITE, whose tenth anniversary we celebrate with this issue. This publication, which is mailed regularly to those active in the commercial, mechanical and scientific spheres throughout the world, is responsible very largely for the thorough diffusion of knowledge concerning the interesting subject of graphite, graphite products and their uses. That the paper is valued and appreciated is fully evidenced by the many voluntary compliments that are paid it, and by the many requests that we constantly receive from those desiring their names placed on our mailing list. Frequent quotations from GRAPHITE in the leading mechanical, scientific and trade papers, giving still further publicity to graphite and its uses, also indicate that our breezy little paper has achieved a creditable and enviable standing.

A WORD FROM THE PAINT DEPARTMENT

Through the columns of GRAPHITE we have been pleased many times to tell our readers of the many uses of Dixon's Silica-Graphite Paint, and we have attempted with comments and illustrations to show the evidences of the usefulness of this time-proven success.

Iron or wood is perfectly preserved under the most adverse conditions if Dixon's Silica-Graphite Paint is used.

Within the last years, manufacturers of various grades of graphite paint have sprung up, in fact today some old and reliable houses have started the manufacturing of this material.

But Father Time demonstrated long ago that for durability and economy no form of graphite equals the Ticonderoga Flake—and every gallon of Dixon's Silica-Graphite Paint contains this wonderful pigment. The silica we add to the graphite to give additional toughness to the pigment.

The Dixon Company's Paint Department is 45 years old and is proud and jealous of the reputation and pre-eminence acquired by this product since the advent of GRAPHITE ten years ago.

To those of our readers who are interested in the subject of graphite paint, we shall be pleased to send matter pertaining to any particular class of work under consideration.

THE NIGHT BEFORE CHRISTMAS

By CARL WERNER.

'Twas the night before Christmas, when all through the flat
 Not a creature was stirring, not even the cat.
 Above the steam-heater the stockings were placed
 In hopes that by Santa they soon would be graced.
 The children were snug in their wee folding-bed,
 While visions of Teddy-bears danced through each head.
 And I in pajamas—likewise in a grouch—
 Had gone to my patent convertible couch,
 When out on the asphalt there rose such a clatter,
 I sprang from my bed to see what was the matter.
 A mantle of darkness enshrouded the room,
 The “quarter” gas meter had left us in gloom,
 But, after detaching a chair from my feet,
 I threw back the curtain, looked down the street.
 The arc light shone bright on our new garbage can
 Awaiting the call of the D. S. C. man;
 But what did my wondering optics devour
 But a big touring-car of a hundred horse-power
 With a businesslike chauffer, so shiny and slick
 I knew in a jiffy it must be Saint Nick.
 As dry leaves before the wild hurricane fly
 He ascended the fire-escape—nimble and spry.
 I drew in my head, and was turning around,
 When in through the airshaft he came with a bound.
 His coat was of broadcloth—the finest I’ve seen—
 Though it smelled rather strongly of fresh gasoline.
 A bundle of banknotes he had in his sack,
 And he looked like a winner just home from the track.
 His cheeks were like roses, his nose like a cherry;
 He’d the air of a man who is satisfied—very!
 A fragrant Perfecto he held in his teeth,
 While its smoke crowned his ten-dollar tile like a wreath.
 He had a broad face and a well-nourished belly
 That shook when he laughed, like a bowlful of jelly.
 He was chubby and plump, but a shrewd-looking guy,
 And there gleamed through his goggles a keen little eye.
 He spoke not a word, but the foxy old elf
 Just walked to the mantel and laid on the shelf
 A letter, typewritten in businesslike style,
 Then down the dumb-waiter he sped with a smile.
 He jumped in his car, and with three loud “honk-honks”
 He whizzed ‘round the corner and off toward the Bronx
 I opened the letter, the message I read,
 And then I crawled silently back into bed;
 For here’s what I saw—with dismay and disgust:
 “RETIRED FROM BUSINESS; SOLD OUT TO THE
 TRUST.”—*Saturday Evening Post.*

JOY FROM WITHIN

The great lesson to be learned is that happiness is within us. No passing amusement, no companionship, no material possession can permanently satisfy. We must hoard up our strength. We must depend upon our own resources for amusement and pleasure. We must make or mar our own tranquillity. To teach them this is the preparation for life which we should give our children.—*Philadelphia Ledger.*



ROYAL INSURANCE COMPANY'S BUILDING

SAN FRANCISCO, CAL.

THOMPSON-STARRETT COMPANY, Contractors.

This picture gives some idea of the spirit of new San Francisco. Steel construction amply proved its merits in the late earthquake and fire, and is being largely used in the modern office buildings of San Francisco.

The building is eleven stories high and contains 790 tons of steel. Dixon's Silica-Graphite Paint, two coats, was selected for the steel work.

DON'T TALK SO MUCH

Sometime ago an interesting theory was elaborated before the Psycho-Therapeutic Society of London by the Rev. B. S. Lombard, who has given the matter much study.

Dr. Stenson Hooker supported the speaker in a recommendation that one room be set aside in each of the London hospitals for silent treatment.

While neither of the gallant speakers particularly mentioned the talking proclivities of woman in his argument against garrulity, yet indirectly they did in the following:

"An enormous amount of vital energy is wasted in talking," said the vicar. "An excessive talker is a human vampire who saps the vital energy of those about him. People silent by nature seldom are ill. A large percentage of the victims of nervous disease are great talkers who discuss imaginary ailments until they get them."

We can now understand why long sermons have wearied us so, and respectfully suggest the dominies take some of their own treatment.



MARYLAND BRASS AND METAL WORKS,
BALTIMORE, MD.

Joseph Dixon Crucible Company,

Philadelphia, Pa.

GENTLEMEN:—The crucible sent us for trial run us 36 heats and then showed a crush crack which I believe was produced by either the tongs or by being crushed by cokeing. We were in no way more careful with this crucible than others, and took no extra care in using it. I consider this a splendid record for any crucible, and thought you would like a photo of it after the 36 heats.

Respectfully yours,

PARCELS POST LEGISLATION

Much has been said and written concerning a Parcel Post carrying service. Those who are interested and who desire to obtain some information from one who has apparently given much study and thought to the subject should write the Burrows Brothers Company, Cleveland, Ohio.

They are sending out with their compliments some little pamphlets the subject matter of which has been used as the basis of talks delivered before Chambers of Commerce, Boards of Trade, and social clubs of both men and women by Mr. Charles William Burrows, president of the Burrows Brothers Company.

NEW HOME OF THE BOSTON OFFICE

In February, 1904, the Joseph Dixon Crucible Company opened an office in Boston. During the first year particular attention was given to pushing the sale of Dixon's Silica-Graphite Paint in New England. The attention of the railroads, street railways, civil engineers, architects and manufacturing plants was called especially to this product as a metal preservative.

As the office became better known inquiries pertaining to the various Dixon products, requests for samples and orders began

to appear and a marked increase in this direction followed. It was very apparent this year that the office recently occupied was too small. For this reason and in order to be in closer touch with the various branches of the wholesale trade, more commodious quarters were secured in the John Hancock Building.

This building has all the improvements to be found in a modern office building of the first class. There is an improved method of ventilation. The offices are finished in mahogany, supplied with hot and cold water, electric lights, steam heat and safe deposit vaults.



Mr. H. A. Nealley, manager of the Boston Branch, has been giving special attention to railroad work and the sale of Dixon's Silica-Graphite Paint.

Mr. A. K. Ingraham, who has represented the Dixon Company for many years, has charge of the pencil department and in connection with this work has a host of friends not only in the New England States, but throughout the country.

The crucible and foundry trade is efficiently represented by Mr. A. L. Haasis, one of the Dixon Company's oldest and most popular salesmen.

Mr. C. A. Shaw is giving attention to the Electrical Products, graphite brushes, as well as lubricants.

Mr. J. A. Mott, while calling on the general trade, confines his work particularly to the automobile lubricants in which he has had considerable experience.

In the management of the Boston Office it has been the aim to follow the high standard and give the competent service characteristic of the general office at Jersey City. In recognizing such a plan probably no people are more appreciative than the natives of New England.

WE DO not at the moment recall who "Dave Williams" is, but so long as he is a friend of "Billy Housten" we have no doubt he is "all right," as the boys say.

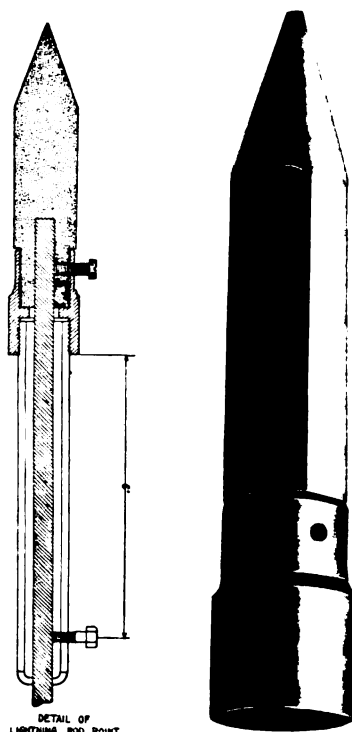
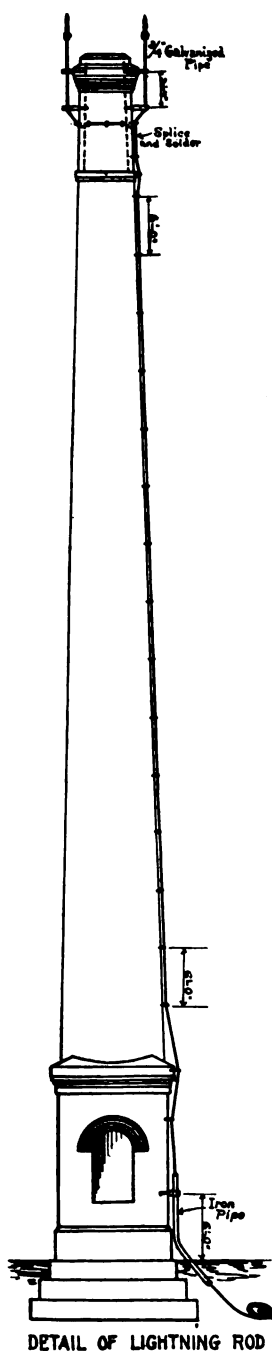
At any rate, that has nothing to do with Dave's baby. Dave has a baby and the baby is showing good judgment very early in life, as it is cutting its teeth on a Dixon No. 1144 Rubber Eraser. So far the result has been extremely satisfactory, and other babies will please set up and take notice.

PROTECTING CHIMNEYS AGAINST LIGHTNING

The Alphons Custodis Chimney Construction Company, whom the Dixon Company supply with graphite points for lightning rods that they install, has furnished us with the following information concerning their work:

The use of carbon or graphite points originated with our company in Germany, and of the thousands of chimneys that

have been protected by such points in Europe and this country, we do not know of an instance of a single one being damaged by lightning, whereas there is an amplitude of chimneys not protected by lightning rods being injured from this cause. We find that electrical experts vary greatly in



their opinions as to the proper means and methods of lightning protection. Not being electrical experts ourselves, we hesitate to assume authority. The consensus of all opinions, however, seems to be that lightning rod points should be free conductors and of such material as not to be readily affected by reason of the elements

of the gases emanating from chimneys. Being isolated and not being liable to abrasion, the carbon points meet the necessity fully.

The final conclusion with regard to lightning rods is that the entire construction should be as substantial as possible, as a lightning rod broken or out of order is considered more dangerous than none at all.

Our general method of isolation of lightning rods is illustrated and described in the enclosed plan and specification.

SPECIFICATION FOR LIGHTNING ROD

At the top of the chimney there will be set two lengths of $\frac{3}{4}$ " galvanized wrought iron pipe, each secured by means of two galvanized wrought iron braces built into the masonry and provided with clamps suitable for sustaining the pipe. The length of the pipe will be capped with a point of Retort Graphite, about 5" long and 1" in diameter, set into suitable brass sleeve, threaded to fit corresponding thread on pipe. A $\frac{1}{2}$ " hole will be drilled into the graphite point from the lower end for a distance of 2" and suitable set screw provided. A $\frac{1}{2}$ " stranded copper cable or main will be set into the graphite point, and secured by means of the before mentioned set screw; thence extending through the length of pipe down the side of the chimney and terminating in the earth in a coil. The remaining one point shall be connected to the cable by means of a loop around the top of chimney.

The copper cable will be secured to the sides of the chimney by means of braces with suitable clamps.

GROWTH OF AUTO INDUSTRY

The following table appeared in *Cycle and Automobile Trade Journal*. It is interesting in itself and is appropriately included in the issue of GRAPHITE that illustrates its own growth of ten years.

	1898	1908
Automobile makers.....	17	175
Cars produced in year.....	239	50,000
Persons employed.....	638	60,000
Value of product.....	\$219,600	\$105,700,000
Capital involved.....	\$1,000,000	\$95,000,000
Automobile agencies.....	40	2,150
Agency employees.....	100	21,000
Agency capital.....	—	\$57,500,000
Allied industries employ.....	—	29,000
Allied industries' capital.....	—	\$37,000,000

MAKES THE WALLS SMOOTH

Why can anything like graphite, which is a mineral, aid in eliminating friction, such, for example, as that which exists in a cylinder?
—PUZZLED SONS.

If a microscope is used on even the smoothest surface turned out by man, it will be seen that no matter what the surface under inspection is, it is full of inequalities. Pure flake graphite is said to fill these irregularities, substituting for it a veneer-like coating of great smoothness and endurance. The graphite may be introduced into the cylinder of an automobile by placing a very small quantity of it in the crank case—not over a teaspoonful to each quart of oil used. When the engine is standing the graphite will settle in the oil, but once it is in motion, enough of the graphite is stirred up to fill all the pores of the cylinder walls.—*Motor Print*.

A WRITER on automobile subjects well says that the first care of the driver should be for the safety of his passengers. The second should be lubrication of his engine and car, for on good lubrication rather than upon anything else depends the running of his car, and frequently the safety of his passengers.

THE CARE OF CRUCIBLES IN THE BRASS FOUNDRY

By EMIL B. HORNE.

With proper care, the life of the average crucible used in brass foundries can be greatly lengthened. A new, cold crucible should never be placed in the furnace immediately after it has been received. It should be stored in a dry, warm place for at least two weeks before it is used, the top of the core oven being ideal for storage purposes.

The lifting of the crucibles out of the furnace is another factor that affects the number of heats that can be safely made. The tongs shown in Fig. 1 are properly styled "crucible crush-

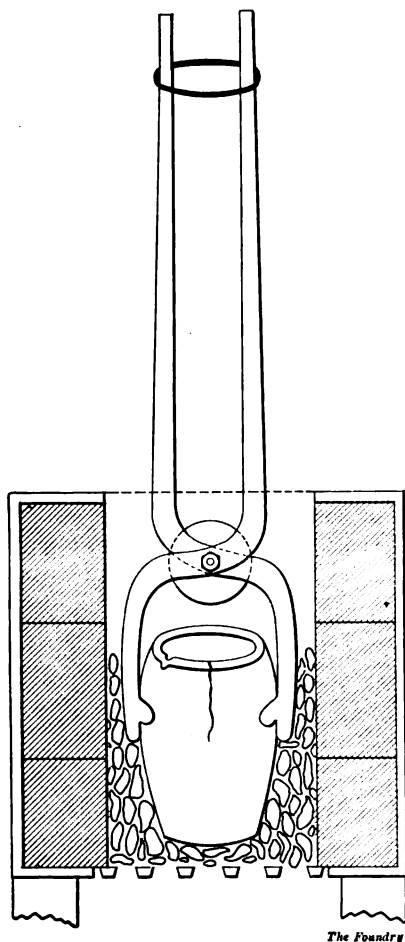


Fig. 1—Tongs Which Easily Crush the Crucible

ers." A crucible in which 8 or 10 heats have been made does not require much force to crush it. The long arms on the tongs when pressed together sufficiently to slip over the ring exert a great force and crucibles are frequently flattened in this way. The tongs shown in Fig. 2 are not much better and are used almost exclusively in Germany.

A pair of tongs and a catching device are shown in Fig. 4, with which any crucible can be pulled without crushing. The pot is gripped a few inches below the center, and the fuel must be pushed aside to insure a firm hold. By the use of the tongs shown in Figs. 1 and 2, the crucible is frequently only held at the top and the pot is easily crushed in this way. The tongs shown in Figs. 4 and 5 are used in connection with hoists, while the arrangement shown in Fig. 3 is adapted for small foundries having no hoisting arrangement.—*The Foundry*.

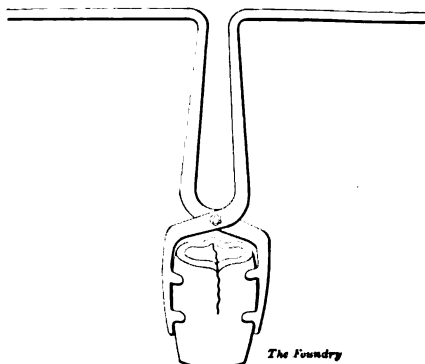


Fig. 2—Tongs used in German Brass Foundries.

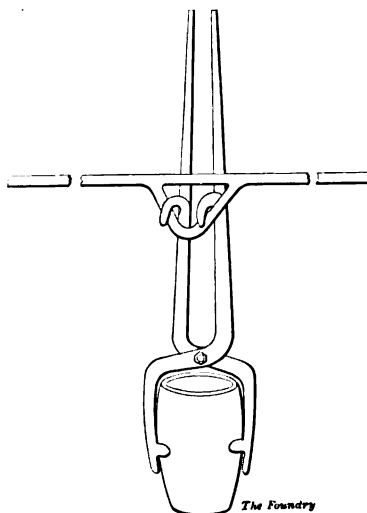
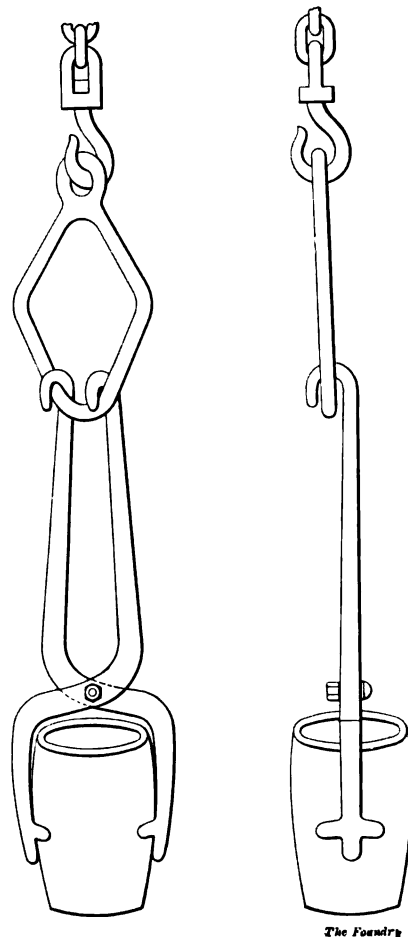


Fig. 3—Tongs Shown in Figs. 4 and 5 Adapted for Use in Small Foundries.



Figs. 4 and 5—Tongs Properly Designed Which do not Crush the Crucible.

I keep in a convenient place, a shallow pan partly filled with graphite and cylinder oil, in which all rod packing is thoroughly soaked for days, weeks or months, as I find convenient before using.

I have, among others, a double-plunger boiler feed-pump, with very deep stuffing-boxes. For this I cut a piece of $\frac{1}{2}$ inch square flax packing long enough to completely fill a box, and after thoroughly soaking in graphite and oil, as described, I place it in the box in one piece, and allow it to remain in use about two months, when I replace it with another piece; unless too badly worn I return it to the graphite and oil pan,

later on using it again in the pump, being careful not to place the same side to the plunger as formerly.

For the Corliss engine I use a diagonal packing and add a new ring about once in nine months. The steam valve stems are packed about once in six months with the same make of packing.

Regarding manholes, I cement the gasket to the plate with white lead, then give the reinforcing rim around the manhole a coating of graphite and cylinder oil. This will prevent the gasket sticking to the boiler head. I renew this last coating as often as necessary to prevent sticking. If renewed too often the oil will soften the gasket, allowing it to blow out. For all gaskets in flange unions where I use the white lead, graphite and oil, I use only enough oil to moisten the graphite.

PETER HOOK in *Power and Engineer*.

A SHORT CHRISTMAS

"Christmas Day is only three hours long in the Finnish town of Tornea," said a traveler. "I spent last Christmas there. At sunrise I got up to see my presents and to read my Christmas mail, and night had fallen before I got through breakfast.

"Tornea," he went on, "has a day 22 hours long in June. Pretty good, eh? But that is nothing beside Wardbury. Wardbury, in Norway, has a day that lasts from May 21st to July 22d. And Spitzbergen's longest day lasts 3½ months."

—*Buffalo Express*.

SOME PLEASANT REMARKS FROM BANKERS

On the Qualities of Dixon's American Graphite
Pencils and Erasive Rubbers

First. "We take this opportunity of congratulating you on the good qualities of Dixon's Pencils and Rubbers. We have always found them satisfactory."

Second. "We are interested in Dixon's Pencils, and generally use them in preference to any other."

Third. "We have used Dixon's Pencils for several years, and like them very much."

Fourth. "Have used Dixon's American Graphite Pencils for many years with entire satisfaction."

Fifth. "Have used Dixon's Pencils for some time, purchasing them here. It will afford us pleasure to use them exclusively in the future."

Sixth. "We are using, and shall use only Dixon's Pencils."

Seventh. "We are now, and have for some years been using Dixon's American Graphite Pencils."

Eighth. "We are interested in Dixon's American Graphite Pencils, and have been using them for some time."

Ninth. "We are using Dixon's goods, buy of our local dealers. Dixon's Rubbers are the best we have ever used."

Tenth. "We are using Dixon's Pencils with pleasure, and have made note of some new brands of Dixon's Pencils for future reference."

Eleventh. "We are giving Dixon's American Graphite Pencils a trial, and shall probably order as wanted through our local stationer."

Twelfth. "We thank you for samples of Dixon's Pencils, and if they continue as good as samples, will order them in the future."

Thirteenth. "We are using Dixon's Pencils, buying them of our local stationer."

Fourteenth. "Using only Dixon's American Graphite Pencils."

Fifteenth. "We are already using Dixon's Pencils and Erasers, purchasing them from our local dealers."

Sixteenth. "We are using Dixon's Pencils, and shall specify the 'Anglo-Saxon' when making our next order."

Seventeenth. "We have been using Dixon's American Graphite Pencils for nearly a year, and shall probably specify the 'Anglo-Saxon' in our next order."

Eighteenth. "We are at the present time using Dixon's Artist Pencils No. 216, which we purchase from time to time through our local stationer."

Nineteenth. "We use only Dixon's Products."

Twentieth. "We have used Dixon's Pencils for many years."

Twenty-first. "We are already using Dixon's Pencils, which give excellent satisfaction."

Twenty-second. "We are using Dixon's Pencils as well as some foreign makes, and we find Dixon's fully equal if not superior."

Twenty-third. "We find Dixon's Pencils very satisfactory and when our present supply now on hand is out, will buy more."

Twenty-fourth. "We are users of Dixon's American Graphite Pencils."

Twenty-fifth. "We are using Dixon's American Graphite Pencils, and are purchasing them through our local dealer."

Twenty-sixth. "We have always contented that the Dixon Pencils are the best on the market, and shall be pleased always to call for same at our local stationer."

Sometime since the question arose in the Dixon office whether the National Banks in the United States were making use of Dixon's American Graphite Pencils, or if they were making use of other brands. To get evidence in the matter, we sent out quite a number of inquiries, and received several hundred replies all of the above tenor.

It would therefore seem that the American banks, like the American schools, fully appreciate the tough, durable leads which are found in Dixon's American Graphite Pencils.

Those who know of Dixon's American Graphite Pencils may be surprised to know that the Dixon Company are the youngest of the pencil manufacturers.

VIVAT AMERICA!

"America has at last come into her own. An American car, designed by an American, built by Americans in an American factory, of American material, and driven by an American, finally won America's classic contest in this, the fourth, year of the stubborn perseverance of Americans to place American cars on a speed level with the product of Europe."

The above is from one of the automobile papers and refers to the Locomobile, winner of the Vanderbilt race. It reminds us of an old-time Dixon slogan, "Dixon's American Graphite Pencils; designed by an American, made in an American factory by American workmen, of American graphite and American cedar, for the American people." We believe we worked "America" and "American" somewhat more, but don't recall them now, and it doesn't matter.

HOW HUBBY DOES IT

The manager of a large shop in the Rue de la Paix, who makes a specialty of artificial pearls, says that the demand for these ornaments from Americans is exceptionally brisk.

"Most of our customers," he adds, "are men who have promised to take back to their wives a pearl necklace from Paris. No one but an expert can tell our pearls from the real thing. Our customers are thus able to satisfy their wives at a smaller outlay."

DIXON'S LINOTYPE GRAPHITE

The foreman of the State printing plant of Kansas states that Dixon's Linotype Graphite is more satisfactory than any other that has been furnished that office.



The top view here shows the pencil factory proper, where the finished leads are taken and combined with the cedar cases. This sounds simple, but it includes over thirty operations. The total floor space occupied by the pencil plant is 106,000 square feet. Just behind the pencil works is the crucible factory with 121,500 square feet.

The paint and grease works is shown in the lower view and occupy a building containing 30,000 square feet, and the brass works of 20,000 square feet adjoins.



The House

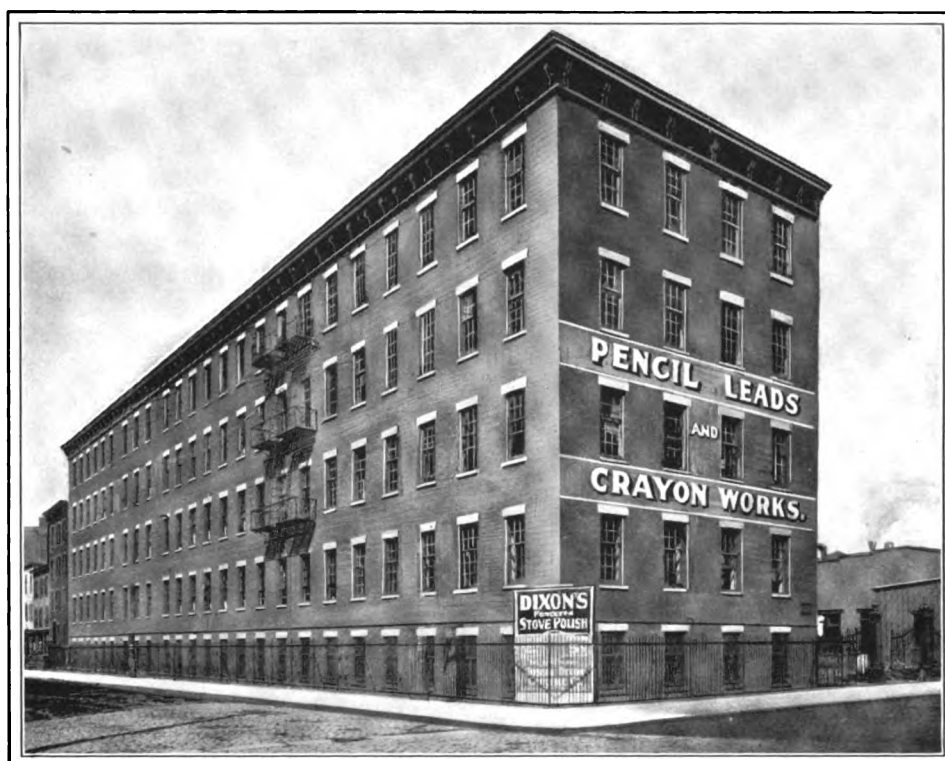
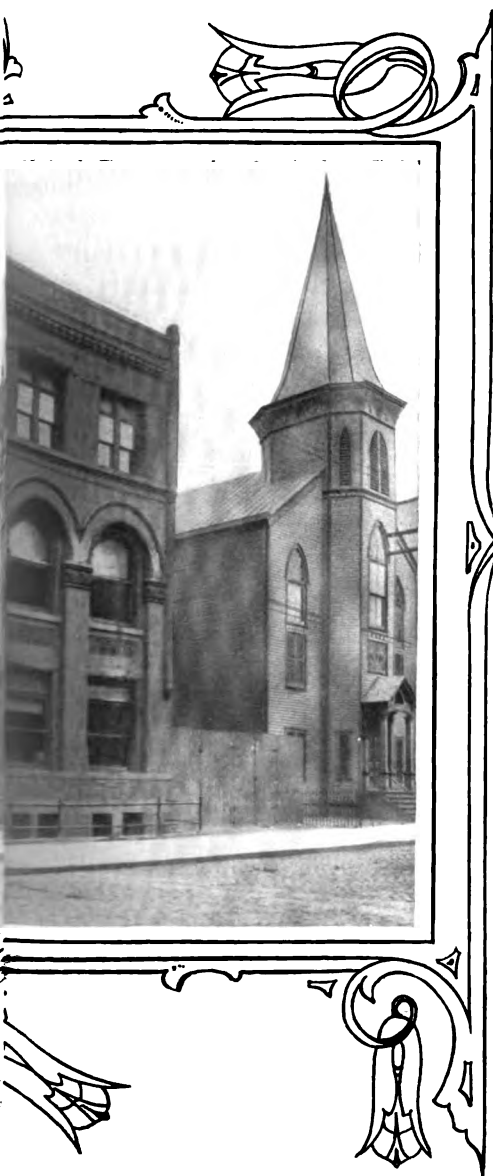
In 1827, Joseph Dixon began the manufacture of crucibles and stove polish; thus the Joseph Dixon Crucible Company had its beginning. Little by little it has grown until the present immense proportions have been reached. We doubt not it shall continue to grow, for the graphite industry has not yet



The above view shows the office building. This structure is three stories and has a frontage of one hundred feet with a floor space of 7,500 square feet exclusive of basement. To the north of the office is the pencil factory and crucible works. Diagonally across the street is the pencil and colored leads plant, touching the generating plant.

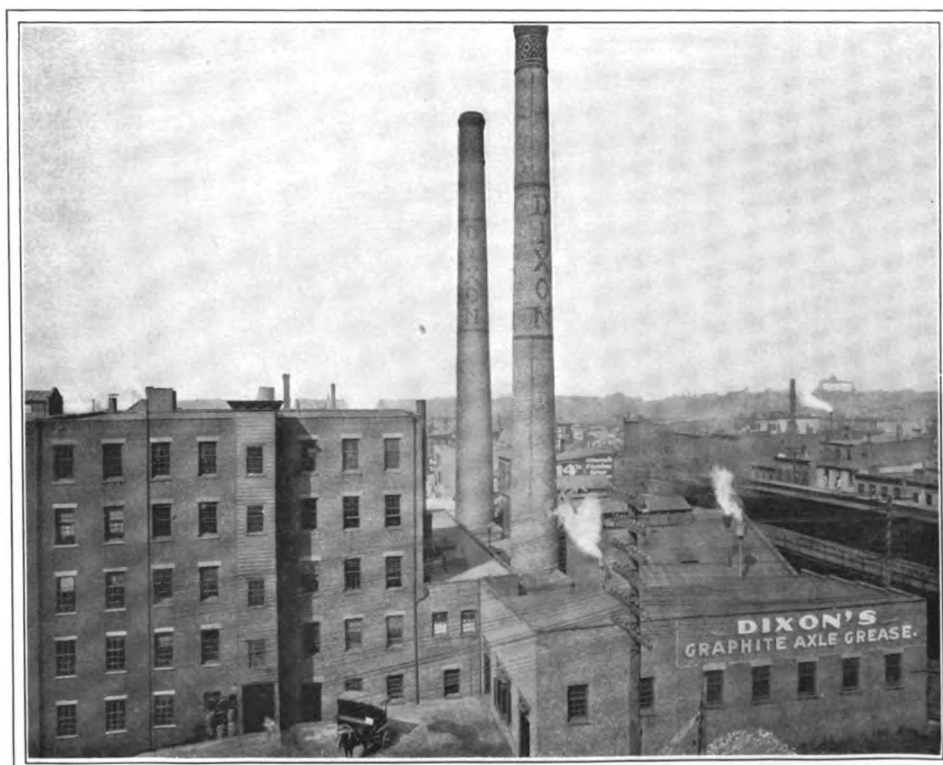
Dixon Built

attained its full development—but we shall not here attempt to anticipate the future. It is impossible to get one photograph that will give a correct idea of the size and extent of the Dixon Plant. A portion of each of four blocks is occupied, the four corners can be seen in the views.



The above picture shows the pencil leads and colored crayon works, containing a floor space of over 67,000 square feet. Here is where the grinding, mixing and baking processes are completed.

The lower view gives a glimpse of the boiler and engine rooms. The generating plant joins the pencil leads and color works at a cross extension that runs at right angles to both the power and leads plants. The engine and boiler rooms have a floor space of 9,600 square feet.



To the west of the office is the lubricating graphite, grease and paint works. Adjoining this structure is the brass and rubber works. The wide scope of the graphite industry demands these different factories. Branch offices are maintained in New York, Philadelphia, Boston, Baltimore, Pittsburg, Chicago, St. Louis, San Francisco.

STENOGRAPHER PENCILS

Sometime ago the Dixon Company, to learn what sort of lead pencils were preferred by stenographers, sent out letters of inquiry to practical shorthand writers, to teachers of stenography, and to stenographic publications. The results were as follows:

Those who prefer pencils of regular diameter, 88%.

Those who prefer pencils of small diameter, 12%.

Those who prefer leads of medium hardness, 77%.

Those who prefer soft leads, 23%.

Those who prefer pencils that could be sharpened at both ends, 84%.

Those who prefer pencils with rubbers, 10%.

Those who prefer pencils with nickel caps without rubbers, 6%.

Those who prefer Dixon's Pencils, 57%.

Those who used pencils of various makes, not Dixon's, 43%.

Practically speaking, all preferred a round shaped pencil, only one favoring a hexagonal shape. One stenographer preferred pen and ink to any kind of a pencil.

If the majority counts in elections, then so far as stenographers are concerned, all should use Dixon's American Graphite Stenographer Pencil, which is a regular diameter pencil without tip or rubber, and which is made in three degrees of hardness, so that in the matter of hardness of lead anyone can be suited.

As the nerves and veins of the fingers lie in between the fingers, the argument for a round pencil was that the shape made it easier for these nerves and veins, and caused less fatigue, and for the same reason the regular diameter pencil having a larger surface was better than the small diameter.

The argument in favor of the pencil of medium hardness was that such a pencil was equally useful for the shorthand systems that required shading as for the light line systems that require no shading. Furthermore, that the lead of medium hardness was the most durable lead as well as the most satisfactory.

DIXON'S GRAPHITE

It's Wonderful Lubricating Quality Shown in a Test
Made by the "Scientific American"

A tallow candle bullet can be fired through a board. A straw driven by a cyclone will penetrate a tree. A stream of water, under high pressure, will tear the skin off a man's hand. A copper disk rotating slowly can be cut by a steel cutting tool; but if rotated at high speed it will turn about and cut the tool. These facts suggested an experiment on the cutting ability of paper. Everyone knows that the hand can be badly cut with paper, but the experiment was undertaken to discover whether hard substances such as wood could be cut with paper.

A page of the *Scientific American* was trimmed to the form of a disk, 10 or 11 inches in diameter, and a wooden spool was glued to the paper at its center. An electric fan was dismantled of its fan and guard, and the spool was bored out to fit snugly on the armature shaft. A wood screw with its point blunted was threaded through the spool and against the shaft to fix the disk securely thereon. Then the current was turned on and the pencil was held lightly against the edge of the

spinning paper. Although the paper bit into the wood the centrifugal force was not sufficient to hold the paper rigid, and instead of making a clean cut it scratched the wood as if by a file. The fan was making about 2,000 revolutions per minute, but the speed should have been doubled for so thin a paper. Better results were obtained by pasting the paper on a disk of cardboard of smaller diameter, so that the edge of the paper projected half an inch over the periphery of the cardboard. With this a clean cut was made into the wood of the pencil.

But the best cutter was made out of a sheet of three-ply Bristol board, the kind on which drawings for the patent office are commonly prepared. With this stiff paper the pencil was cut into very quickly, and the cut was exceedingly fine and clean. When the lead of the pencil was reached, the progress of the cutter was much slower because the graphite acted as a lubricant. Neither the paper nor the Bristol board showed any material wear with use.

The *Scientific American* in this article shows pictures of the apparatus together with a pencil which has been cut in two by the paper. The remarkable part of the experiment was in the fact that when the cutting edge came up against the graphite, so smooth was the graphite that in spite of the high speed at which the cutting substance was driven, not even friction was possible on the smooth graphite to permit the cutting.

IS HE HAPPY—THOUGH SINGLE?

As there are several bachelor men on the Dixon staff the one who sent in the following for GRAPHITE will not easily be placed. We think he must be envious.

What is marriage?

Marriage is an institution for the blind.

Why do some people never marry?

Because they do not believe in divorce.

When a man thinks seriously of marriage what happens?
He remains single.

Is an engagement as good as marriage?

It's better.

Why does a bride wear a veil?

So that she may conceal her satisfaction.

When a man marries has he seen the end of trouble?

Yes, but it is usually the wrong way.

What is greater than a wife's love?

Her temper.

Do married women suffer in silence?

Yes, they all suffer when they may not talk.

When a man says that he can manage his wife, what does he mean?

He means he can make her do anything she wants to.

MCDONALD BRO'S Brass Foundry, Omaha, Neb., gave the Dixon representative their opinion of the Dixon Crucibles, as follows:

"We have used Dixon Crucibles eighteen years. Tried some others once, and so long as Dixon's come as good as they do, it will be eighteen years before we try others."

In the language of our representative, "This sounds good to us."

1858-1908—ALSO 1870-1908

A Golden Wedding and Fifty Years of Happiness, and Thirty-Eight of the Years with the Dixon Company.

On Tuesday, November 17, at his beautiful and happy home at Mt. Vernon, New York, Mr. A. K. Ingraham celebrated his Golden Wedding. To take Mrs. Ingraham's word he has for fifty years been a model husband, and to take Dixon's word, he has for thirty-eight years been a model Dixon salesman and representative.

A large delegation from the Dixon Company joined with the other friends of Mr. Ingraham to make the occasion a memorable one.

The officers of the Dixon Company made a fitting present, and other members of the Dixon Company's staff representing office, works, and selling force combined in a joint present. Many other beautiful presents were received by Mr. and Mrs. Ingraham, who, assisted by their daughter, welcomed and entertained the many guests. Beside golden presents the following golden verses in a golden letter were sent by Mr. H. A. Nealley.

1858

1908

TO MR. AND MRS. ARTHUR K. INGRAHAM

On this, your Golden Wedding Day,
You've more than golden treasures—
More than these broken lines can say—
More than the music's measures—
To bring you joy throughout each year
And comfort with the giving—
The heartfelt words of friends sincere
Which makes one's life worth living.

Just half a century ago
You took life's task together—
Saw fifty Winters come and go—
Each lead to Summer weather.
Well may your days together here
Compare with Nature's story—
The pure rays of the morning clear—
The sunset's golden glory.

May all the joy this world can know
Keep free your hearts from sorrow,
And with a hollowed touch bestow
A greeting on each morrow.
Good luck to you, God bless your way,
And may you live to see
A happy diamond wedding day
In nineteen thirty-three.

—H. A. NEALLEY.

A **FIRST-GRADE** boy brought perfect spelling papers home for several weeks and then suddenly began to miss five and six out of ten.

"How's this, son?" asked the father.

"Teacher's fault," replied the boy.

"How is it the teacher's fault?"

"She moved the boy that sat next to me."

—*Philadelphia Ledger.*

THE CARNEGIE FEELING

The engineer who has used Dixon's Ticonderoga Flake Graphite on all the bearings of his engine, and who has put a little of it in his cylinder as well, has what Mr. Dooley calls, "The Carnegie feeling." There is no worry or care big enough to bother him—at least not in his engine room.

This Carnegie feeling may also be enjoyed by any one who may be in danger of friction troubles; if he will only apply Dixon's lubricating graphite to the spot at the proper time.

We shall be glad to tell any interested reader more about Dixon's system of lubrication.



The Carpenter Uses Dixon Pencils

Good workmen are particular about their tools—that's why Dixon's Carpenter Pencils are in such universal use.

We are rather proud of this line, having made a particular effort to produce uniformly dependable pencils for the carpenter and secured his approval.

Dixon's No. 997 is an especially good pencil; tough, strong lead, handsome red and black finish, bevel edges—carpenters like it. Of course we have other styles, they're all good.

JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J.

AN ARTICLE ON LUBRICATION

By L. H. SNYDER

Much has been written on the subject of lubrication, some of which is good and some of which is bad.

This article will attempt to briefly discuss the subject of lubrication and to point out the advantages and limitations of the different kinds of lubricants and define a few technical terms and expressions which are used by writers in treating of this interesting and important question.

THE OBJECT OF LUBRICATION.

The most carefully polished metal surfaces will show, under a strong microscope, irregularities. These have the appearance of hills and valleys and rub upon one another, so it is necessary that the journal and the bearings be separated from each other; therefore a lubricant is interposed between them, forming a film of various thickness.

Now there are certain qualifications which a lubricant must have, a few of which are:

First, it must have the least friction in itself.

Second, it must not gum, dry, evaporate or lose its consistency within certain defined limits.

Third, it must be adapted for the work required.

Fourth, it must be free from acids, alkalies and other harmful agencies.

Fifth, it must be a good conductor of heat.

To sum these up, the lubricant must be just as thin as it is possible to have it and still have enough body to stand the pressure and be free from adulteration.

The co-efficient of friction is the ratio of the force required to slide a body along a horizontal plain surface to the weight of the body. It is equivalent to the tangent of the angle of repose or the angle between a horizontal and inclined plane which will just overcome the tendency of the body to slide. There are two types of friction; the force required to start a body sliding, called the friction of rest and the force which is required to continue its sliding after having started, which is called the friction of motion.

The temperature of the bearings will increase as the speed increases and up to certain limits the friction will decrease with an increase in temperature, because the irregularities give way easier as the temperature increases and because the oil is less viscous.

As the load increases, the friction decreases and remains practically constant within certain limits; this range of load varies with different lubricants and should be a determining factor in their choice.

The co-efficient of friction varies with different kinds of metals.

These laws hold for solid lubricants, and in fact all lubricants follow these laws to a certain extent.

Viscosity is another ratio and means the rate of flow or a comparison. A certain amount of water at a given temperature is timed when flowing through an orifice. The oil is put through the same test and the comparative time is its viscosity;

$$\text{or viscosity} = \frac{\text{rate of flow of oil}}{\text{rate of flow of water.}}$$

CLASSES OF LUBRICANTS.

There are at least three distinct classes of lubricants; liquid, semi-liquid, and solid.

Under the class liquid lubricants, there are grouped all lubricating oils. Some people, in using the term "lubricant," think only of oil. There are many places where oil is used, but the principal use is in cylinder lubrication.

The reason greases are not satisfactory for cylinder lubrication is because they are usually rich in hydro-carbons and do not become well distributed. On the other hand, oils will not stay where you want them when used in a great many other places.

SEMI-SOLID LUBRICANTS.

Under this head, there are all classes of greases, from those of very high melting points to very low ones.

The argument is often made that a grease is not economical because heat has to be generated before the lubricating qualities of the grease are felt and power must be spent to develop this heat.

Now this argument has about as much sense to it as the old idea about the earth being flat, because as I have pointed out, as the speed increases, this is accompanied by a certain amount of heat which changes the lubricant from a semi-solid consistency to a liquid.

Again, you must remember that there are some greases in which the change from the solid to the liquid is very sudden, that is, a few degrees difference in heat will make a radical change in its physical formation.

If any of you have ever had any experience with cocoanut butter, you will realize that it takes but very little heat to change it from a solid to a liquid. Many greases are built on this principle.

Of course, if you use a high melting point grease where a low melting one should be used, there will have to be more heating before it can work, but who would think of using a cylinder oil where a machine oil is used. Why should not there be just as much thought given to the kind of grease used? There are greases upon the market which begin to lubricate as soon as they are delivered to the bearings, because of their plastic condition, and which have a wide range of melting points.

One of the most convincing arguments in favor of grease lubrication is the fact that a large percentage of hot boxes on locomotives have been eliminated since the boxes have been equipped with grease cups.

Some of the many advantages of grease lubrication are:

It is used only as needed, and is therefore economical.

No care has to be exercised in using it except occasional inspection of cups and refilling.

Fire risk is very much reduced.

The grease forms a collar on the edge of the box on the shaft after doing its work, which prevents dirt and grit from working into the bearing.

The writer would advise using greases wherever practical.

SOLID LUBRICANTS.

Probably the best known lubricant under this heading is flake graphite. The function of flake graphite is to get right at the real cause of friction, to eliminate the irregularities by

filling in the low spots and forming over the bearing surfaces a thin, tough, veneer-like coating of marvelous smoothness.

It has been found by actual test and experience that friction is very much reduced, smoother running obtained, and wear and tear relieved.

Flake graphite should be used with oils or greases wherever they are used. It may be introduced to steam engine cylinders by means of a hand pump, with which all traction engines should be equipped, by means of special graphite lubricators or through a positive force-feed lubricator. Never attempt to feed it through a sight-feed lubricator, or with the oil through an oil cup, as graphite is heavier than oil and will eventually settle and you surely will have clogged pipes.

The use of graphite greases is advised. They do not cost much more than the average grease and their lubricating value is very much greater.

There are other uses for flake graphite. Whenever the boiler is cleaned a little graphite should be thrown into it and you will be able to remove the scale easily, as the metal surfaces will be covered with a film of graphite which will not interfere with the heat transfer in any way, as graphite is a good conductor of heat. It may be introduced with the water through an injector, but if a little is mixed to a stiff paste with kerosene and thrown in when the boiler is empty, the water, as it comes in, will deposit the graphite upon the metal surfaces.

All pipe connections should be made with graphite, a little mixed to a stiff paste with oil (or special graphite pipe-joint compound) rather than using cement. When graphite is used you can break the connection at any time without straining the tools or spoiling the joint.

In gas engines, the flake graphite is introduced to the cylinders by putting it into the cylinder oil where splash lubrication is employed, in the proportions of about a teaspoonful to a quart of oil, or by means of one of the special graphite lubricators, or allowing the engine to inhale a trifle through the intake valves. Care must be exercised, however, not to use too much graphite and only the fine flake graphite is recommended for cylinder lubrication, known to the trade as No. 2.

Considerable might be written on the subject of refining oils, their origin, etc., but space does not permit.

The following very simple test will determine whether the oil contains vegetable or animal oils. Add chlorine; animal oils will be indicated by a brownish appearance of the liquid, while vegetable oils will turn white.

A WIDE DIFFERENCE IN BUSINESS METHODS

The office of the Philadelphia branch of the Joseph Dixon Crucible Company received an order for automobile lubricants from an automobile garage, and as the order was from a new and unknown party, a letter was written to the proprietor of the garage asking if he would kindly give a bank reference or some other reference, as the order was quite a large one and and he was unknown.

The following is his reply:

"Replying to your letter of July 9th, referring to an order given by us to one of your salesmen, inquiring concerning reference as to credit.

"Replying thereto I beg personally to inform you that our

credit is of the very worst, there is nothing tangible that we know of except our debts, which, like the Good Book says,— 'The poor ye have always with you.' We are unfortunate enough to own our property, but like other business crooks, it is in our wife's name. The property consists of various buildings, the highest structure is three stories, but the mortgage is even higher; and from our point of view has a spire the height of which overhangs the famous Tower of Babel. Our accounts are in an alarming state, both as to debit and credit. The mortgage payment on property is now due, taxes for the year unpaid, the grass needs mowing, and the grocery bills for the month are unpaid.

"In view of the fact that we are giving you a perfectly correct representation of our business status, which we assure you is more correct than nine out of ten references you now have on file, and in order that we may not create confusion in your business regime, we are constrained to crave the favor that you will decline to fill our order.

"Believe us to be,

Yours very sincerely,

In quite a different class is the writer of the following, also proprietor of an automobile garage.

"We have yours of the 7th inst. and quite agree with you as to your remarks being eminently proper and correct, and are just about what we have said many times under similar circumstances; but lapses in payments can occur for causes other than want of ability or willingness to pay. Changes in office force, caused by sickness, absence from home, etc., etc., often cause confusion and delay in keeping the current clerical work up.

"We assure you that this, and only this, has been the cause of the delay in our remittance, and for which we most humbly beg your pardon and assure you that same is not likely to occur again.

"Hoping that we have not prejudiced your credit department, we remain,

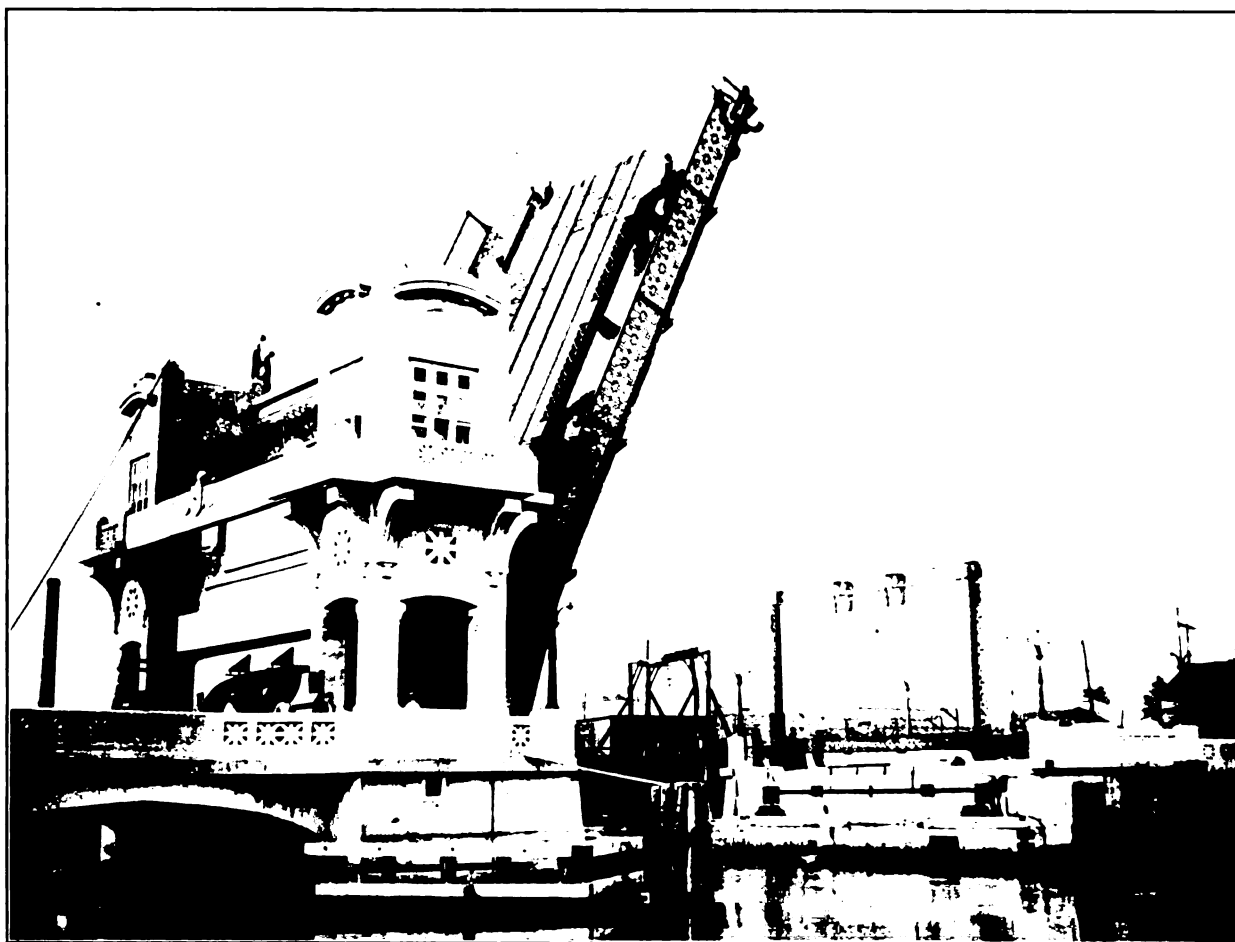
Courteously and sincerely yours,

WE HAVE read in the daily papers of so many strange doings of mechanical things that we are not very much surprised to read that an automobile running along the boulevard at Wildwood, N. J., "became disarranged, skipped, *turned turtle*, and righted itself again." We are further informed that the driver escaped with slight lacerations while the owner landed on his head and shoulders and was picked up unconscious, but we are not told what the auto did after it "righted itself." We presume it withdrew to one side of the road and quietly waited until some one led it home, or may be it fetched the doctor.

A GOOD CANVAS.

A painter of portraits named Morse
Made stump speeches until he was hoarse.

His tubes and his palate,
Working hard for the ballot,
Made an excellent canvas, of course.—*Judge*.



REINFORCED CONCRETE BRIDGE AT CAMDEN, N. J.

Mr. J. A. ALBERTSON, County Engineer.

ORNAMENTATION OF A STEEL BRIDGE BY REINFORCED CONCRETE

By H. E. BUDELL, C. E., New York.

A new departure in the use of reinforced concrete was recently carried out in beautifying the superstructure of a Strauss bascule bridge at Camden, N. J. The general design of the finished structure was highly ornamental and, under the existing conditions, its successful execution would have been a task impossible of accomplishment in any other material than concrete. The steel members of the type of bridge in question are subjected to a severe vibration when the lift is in operation, and this fact alone would exclude the use of any inelastic building material as a casing. In fact, it was deemed necessary to heavily reinforce all parts of the concrete casing with expanded metal and steel rods, in order to obtain a rigid and elastic structure capable of resisting any tendency to crack or spall along lines of stress.

The unusual design necessitated elaborate and complicated form work, which had to be carried out with great precision. As may be seen from the accompanying illustration, there are a number of ornamental brackets and cornices which required very accurate and delicate work to produce. All ornaments, such as medallions, shields and newel posts, were cast on the ground in gelatine molds and then carefully keyed in position on the structure. There were over seventy castings made in this manner, and no special difficulty was met with in setting them. The monolithic work was more difficult, in that a smooth finish was required and no plastering allowed. Also the specifications called for expanded metal over the en-

tire surface of the work, and this surface was extremely irregular. The desired finish, however, was obtained by the use of oiled forms and careful tamping, combined with a judicious grading of aggregate. When completed and washed down with a solution of "killed" cement, the structure presented a surface absolutely smooth and white as a lime plaster. The effect of the finished structure was very pleasing to the eye and was a gratifying exception to the usual unfinished appearance met with in pure concrete structures.

A particular feature of this work included the completion of a certain amount of ornamental handrail and balustrading. It was found that by casting certain portions on the ground and the balance of the rail in place, no difficulty was experienced in obtaining the desired effect at very reasonable cost, although the design was elaborate.

Mr. J. B. Strauss, of the Strauss Bascule Bridge Co., is the engineer and patentee of the bridge. The conception of this artistic application of concrete has led him to apply it to a similar bridge in Copenhagen, Denmark. The concrete work was successfully performed by the Industrial Engineering Co., of New York, who devised and used their own methods for obtaining the desired results.

All iron portions of this structure are painted with Dixon's Silica-Graphite Paint, two coats.

The successful use of Dixon's Silica-Graphite Paint for the bridges of Camden County, New Jersey, is one of the many evidences of the unequalled durability of Dixon's Silica-Graphite Paint, and another proof that Dixon's Silica-Graphite Paint is all that we claim it to be.

CRYSTAL RIVER, FLORIDA

Some clever writer on the *Ocala Weekly Star* has made a trip to Crystal River, and in his readable two column article he has this to say concerning that part of Crystal River which connects with the Dixon Company:

"Beyond is the Dixon cedar mill, which for nearly half a century has plied its trade there in denuding the cedar forests of that section, sawing the logs into certain lengths and sending them to Jersey City, N. J., where they are converted into the famous lead pencils of the land, whose reputation is world wide, carrying the name of the Dixon Pencil Co. around the globe. Over this famous establishment C. E. Herrick presides. He started in as a feeder when a lad and has really grown up in the business and touched all the rounds of the ladder of success until now he stands upon the topmost pinnacle and from that commanding height overlooks and sees that every part works evenly and smoothly and that every person in his employ, an average of 105, does his or her duty. They are a good looking company, well fed and well paid and evidently look on Crystal River as their abiding place on earth. Mr. Herrick, or "Cliff" Herrick, as all of his friends and intimates call him, when he sleeps, dreams dreams, and has been doing this for years and as the earth revolves in his dreams he has visions and in them come ideas of improvement, which in his waking moments he works out and applies to the perfecting of the plant, labor-saving devices being his hobby. The smallest is the "automatic cut off," run by a man's foot and does the work of several dozen hands in assorting cedar strips, and the largest the "over-head lift" ninety feet high, operated on a circular track, costing \$20,000 but doing the work of a company of men. It takes the cedar logs as they are brought into the river and at the landing picks them up with almost human instincts, lifts them up and piles them in great big piles twenty-five feet high. It works on the same principle as a phosphate dredge shovel. The inventor of this labor-saving machine is M. H. Mann, an employee in the architectural building department of McIver & MacKay, Ocala, and which firm erected the device and it took a year to complete the same. It has been in operation about four months and works wonders. It has 800 feet of cable, and a telephone signal service. Of course, we could not have seen these works but for the kind permission of Mr. Herrick, through his representatives, Messrs. J. B. Clark and Joe Williams, who run the office part of the business and to them and Col. Barco, who secured the permit, we return thanks. Mr. Herrick's success is an example for other youths to follow. Attention to business and the interests of the employer ever brings its promotion and reward. It is this principle in the life of that excellent citizen that has placed his on easy street, with a handsome pair of blacks to hold the ribbons over.

"We strolled across to the Mrs. Mary Williams-Allen store, which is a part of the mill in supplying its help with about everything that a mortal could desire. It is ably conducted by Mr. Gilmore Williams, manager, and H. W. Edwards, assistant manager. Adjoining the store building is a fine hotel building known as the Dixon House and admirably presided over by Miss Eunice Williams and enjoys a well deserved patronage, being first-class in every particular."

ELUSIVE BUYER

Elbert Hubbard says that the salesman who makes the record is not the one who knows the most or the one who is the best looking; he's the smiling cuss who never hears the word "No."

Buyers are not waiting for the salesman around the corner. The salesman must go after the buyers very much as the Romans went after the Sabines. It is persistency that wins. The buyer is a shy and sly proposition. He likes to be chased. The salesman who gets the order is the one who is the persistent chaser.

The Philistine also adds, there are two departments to every business. One is Out-Go, and the other is In-Come. When times are scarce the Out-Go men are cut down or laid off; and the lads who lay them off are the In-Come boys. Salesmen who expect buyers to chloroform them and stuff the orders in their pockets, are doomed to disappointment.

It is certainly true that you cannot sell a man goods that are going to burden him, but it is also true that it is for you to decide as to what a customer needs, and then see that he gets it.

INVOKING SPIRIT ADVICE

One of the best known financiers in the financial district gave utterance once to the thought that there was no humor in finance. Whether he changed his mind when he read lately those California dispatches telling of the up-to-date way in which the officers and directors of a trust company made their investigations is not known, but they contradict his theory nevertheless.

It appears that the directors, when about to make an investment, would assemble in solemn conclave in a back room of the institution and call in one of the well-known women mediums doing business in the vicinity, and having put out the lights and drawn the screens the woman would proceed to go into a trance and commune with the departed spirits of great stock operators, and particularly with the shades of Jay Gould and Collis P. Huntington. The medium would obtain the necessary information and the directors would follow the advice transmitted to them. The sequel to the story need scarcely be written. The company went into the hands of a receiver. There is many a bear in the stock market at the present day who would willingly chip in with his brother bears for the exclusive use of a medium's powers who could communicate with some of the great bears of past years, and probably the shade of Addison Cammack would be kept very busy.

BICYCLE RIDING AN INSTINCT

Former riders of the bicycle, who feel the old enthusiasm for the wheel stirring in their bosoms, but who are wondering whether they could master the cycle again, will be interested in the statement recently made by a French scientist. He maintains that after a very limited experience in bicycle riding a person retains the wheel in an upright position by a sort of instinct. No matter how long it has been since a person has given up riding, the trick will come back to one as soon as he gets on a wheel again.

A RECORD CASE OF HORSE BREAKING

Those who have read the Dixon booklet entitled, "The Horse," may recall in it a reference to J. S. Rarey, who challenged the world for a horse he could not manage without recourse to cruelty. Some time back the *Saturday Evening Post* contained an article by A. E. McFarlane that relates how Rarey broke the worst horse in all England. We quote:

In 1858 there arrived in England a small, sinewy, clear-browed Ohioan named Rarey; and he let it be known that he was in England for the purpose of meeting and breaking bad horses.

Now the Arab and Cossack racers live with their masters like house-dogs; and the bronco, for all his fitfulness, still keeps a substratum of the "kindness" of his Andalusian progenitors. But the English thoroughbred is a bad horse; and in 1858 there was in the stables of Lord Dorchester the worst English thoroughbred of which equine history has left us any chronicle. This was the terrible black stallion, Cruiser.

The British sporting papers announced with one grim chuckle that, if Rarey's reputation was not founded on Yankee buncombe, in Cruiser he had his opportunity. Rarey saw Lord Dorchester, obtained his consent, and went to work immediately.

Rarey began by keeping Cruiser in mask and halter, tying him to a pole behind a dogcart and giving him a fagging, forty-mile run. Then, without taking any rest himself, he put the beast back into his stall, cut the mask away with pruning shears and had the windows lightened.

It was a big box-stall, divided into two parts by a four-foot barrier and, a foot above it, a heavy iron guardrail. Rarey caught the animal's eyes, walked slowly up to the barrier, and laid his arm inside of the metal. Cruiser rushed at him foamy-mouthed, and, whipping his arm away in a flicker, yet still standing like a statue, the Ohioan left him champing upon the iron. This was repeated again and again, till the beast's fury, if not really diminishing, began to be mixed with awe. There must be something in this two-legged creature not like other humans. . . . And after a time he came to a stand, staring his wonder.

He was ready for the next part of the lesson. Rarey prepared to go inside. "Whatever happens now, my lord," he warned Cruiser's owner—the only onlooker he would permit—"don't you speak or interfere, at least not till you see me down under his feet and him worrying me." Then, in place of the customary bludgeon, he picked up an apple and walked in. At the same time he began a sort of casual conversation, as if with an old acquaintance. He must get into touch with the animal, yet do it without alarming him. He spent fifteen minutes crossing the stall. And he was always careful, too, to direct his movements neither toward the head nor toward the tail, lest the big horse should start forward or shy back. And, at the end, stopping just at his shoulder, he gave him the apple and then patted him on the forehead. Rarey used to say afterward that the forehead is the helm or handle of a bad horse. And the same curious thing, circus people, say, is true of other bad animals.

Then he began his "gentling" process. From the forehead, in a series of smoothing caresses, he worked his hand first down to the nose and then, always with the lay of the

hair, along the neck and withers to the back and shoulders and down the legs. Never ceasing to talk—the process was one that took almost an hour—he passed from the hoofs to what he said was always the test of his "gentling": he lifted and handled the tail.

"Now," said Rarey, "he doesn't understand me exactly, but he sort of likes me in his own way. And the next thing is to show him *that I'm stronger than he is.*"

By the exercise of tact he slipped a halter on him again. By a little more he got a broad, strong surcingle about his middle. Next, to the unresisting Cruiser's further puzzlement, he raised his nigh forefoot, and, with a small, noose-ended strap, buckled it above the knee. The big horse was now on three legs. And already Rarey had another strap looped about that strong off fetlock. The strap was carried up, under the surcingle, and out on the other side. And the moment Cruiser shifted his weight Rarey drew his strap taut and the animal was on his knees.

An hour followed of the fiercest fighting. Cruiser reared and reared, and flung himself from side to side. He was not friendly now. But Rarey clung like a leech to his strap and surcingle, and thus kept out of reach of teeth and hoofs together. Indeed, when Cruiser stopped rearing he stirred him to try it again, and only when he was on his knees for good did his tamer take the next step. Pushing gently but steadily Rarey toppled him over.

Again there was a renewal of desperate resistance. But by then, too, awe was again filling the brain of that "bad horse." Rarey encouraged him to struggle till his exhaustion was pitifully complete, and for the first time in his life Cruiser saw himself entirely in the power of one of the man tribe. It was the moment when the old-time tamer would have gone to work with a club or crop-stick to "break his spirit." But Rarey had learned somehow that it is almost as great a folly to break the spirit of an animal as to break the spirit of a man. He had no such intention. He merely wanted to show Cruiser that man is the master, and that he can at any time give a full and convincing proof of it. . . . Now, sitting down beside the horse, he began to talk and smile and "gentle" him again.

"For now," he explained finally, "I've got to tell him that this has only been a little joke between friends; and, of course while I *am* stronger than he is, I think he's really about the nicest, dandiest horse I've ever met." And Lord Dorchester was the first to see, in Cruiser's eyes, that look of "admiration," later to be marked in the eyes of practically every horse that Rarey tamed. Before the end of the year the "demon horse" had been fondled by Queen Victoria "and all the royal family." The Ohioan had inaugurated a system of animal training which was to make as great a difference in the education of four-footed creatures as Froebel's ideas were making in the education of little children.

Any who have not read "The Horse" may secure a copy by requesting us to send one and mentioning this issue of GRAPHITE. We have just gotten out the third edition of the booklet.

OUR office boy says: "The politicians have up and gone and done it, and now we will wait and see who's won it."

SONGS THAT TOUCH THE HEART

By SAM MAYER

There must have been some sweet singing in Heaven the night Tony Pastor died. He is best remembered in the past 25 or 30 years for the singing of popular ditties, most of which he wrote, but there are perhaps few today who know that he was a writer of songs for the people, especially during war times.

He wrote many patriotic songs which at the time had an immense vogue, among them "The Monitor and the Merrimac," "The Union Volunteers," "The March of the Union" and "The Irish Volunteer."

"And the brave Colonel Corcoran marched at the head
Of the bould '69th from the Island of Green."

"We are Marching to the War," "Sumter, the Shrine of the Nation," "Ye Sons of Columbia," and "Our Four and Thirty Stars."

There was a big crowd to meet him at the Golden Gate, men who in their day sang themselves into the hearts of the people: Will. S. Hays, George Harley, Dave Wambold, T. B. Dixon, Tony Hart, E. P. Dixey, Tom Prendegrast, Billy Emerson, Stephen C. Foster, and many many more.



TONY PASTOR

There was a plaintiveness about the old melodies which appears to be lacking in the modern songs. Perhaps the oldest of the writers of plaintive melodies, songs for the people, and the one who will be longest remembered is Stephen C. Foster. The play, "In Old Kentucky," with the sweet and pathetic refrain of "My Old Kentucky Home" and "Massa's in de Col' Col' Ground" running all through it, will interest many who at the mention of these old-time but still popular melodies will recall the unfortunate author, Stephen C. Foster, who died deserted by his friends and kinsmen at the Bellevue Hospital, New York, in 1864, from the result of an accident which befell him in the old American Hotel on the Bowery.

Foster was born in Allegheny County, Pennsylvania, in 1826, and at the age of seven learned unaided to play the violin and flute. His first song, "Oh, Susanna," attracted immediate attention. "The two five-dollar bills I received for it," wrote he to a friend, "gave me my first impetus to work." Following this came in quick succession: "Nellie Was a Lady,"

"Massa's in de Col' Col' Ground," "My Old Kentucky Home, Good-night," and Foster found himself famous. Artists of the highest distinction favored him with their friendship. Washington Irving wrote him a letter of generous encouragement which he prized to his death, and Herz, Sivori, Ole Bull and Thalberg were alike ready to approve his genius and to testify that approval in the choice of his melodies as themes about which to weave their witcheries of embellishment.

Then he published "Old Folks at Home," which paid him \$15,000 and was the most profitable piece of music ever published up to that time. His name would live by that song alone, even if "Ellen Bayne," "Old Dog Tray," "My Old Kentucky Home," "Massa's in de Col' Col' Ground," "Gentle Annie," "Uncle Ned," "Farwell my Lily Dear," "Hard Times Come Again No More," "Nellie was a Lady," and over a hundred others, had never been written.

Foster was endowed with many talents. He spoke French and German fluently and was an expert accountant. He also essayed painting, not successfully however, for once being in hard luck in his later days he tried to sell one of his pictures and was very much hurt when the dealer asked him if it was another comic song. He never painted another.

He wrote words to all his own songs and, like the poet Moore, sang them himself with a charming and plaintive sadness in his voice which touched the heart of his listeners. These words were in style almost identical with his melodies, sweet, simple and no worse in rhyme and rythm than the majority of popular lyrics.

The chief charm of "My Old Kentucky Home" is its exquisite simplicity and touching pathos, and that its popularity has in no way diminished in the two generations that have passed since it was written, is evident from the applause with which it is greeted nightly in the stirring drama of Kentucky life, "In Old Kentucky." It is to the credit of the musician who arranged for the play the incidental music, which is made up chiefly of Foster's melodies, that he has not attempted to "modernize" them by the interpolation of absurd variations of his own.

Foster was pre-eminently the ballad writer of America. Late in life the habit of drink became fastened on him and gradually he sank lower and lower in the social scale until one by one his old time friends left him.

During the last three years of his life he made his home in a cheap lodging house on the Bowery and hung around a tumble-down grocery store at the corner of Hester and Christie Streets, New York. It was here a great many of his later songs were written and sold for just enough to keep body and soul together. Among these surroundings was the beautiful song of "Come Where My Love Lies Dreaming" composed. Musicians have declared this to be his best work and that it approached nearer the classical than anything he ever wrote.

When an opportunity offered itself, he would visit Methodist campmeetings, both white and black, and listen to their weird chants and gather many an idea for his folklore songs. In this fact probably lies the secret of his wonderful success in writing negro melodies. One song in particular sprang from this source: "Hard Times Come Again No More," and on more than one occasion in that old grocery store barroom has he been heard to sing that good old "Song of the Weary," with rare pathos, while his pockets were empty and his heart sick.

Thus he lived for three long weary years alone, separated from his wife, the Jennie of his songs, the woman whom he loved, though not enough for him to give up the habit which compelled her to leave him.

"I would like to write a drama to perpetuate my songs" he said once, but Foster's melodies will live long after many of our modern plays, even "In Old Kentucky."

On the tomb of Donizetti in the cathedral at Bergamo is a modest inscription, saying that the dead composer was "a finder of melodies." This simple record—too unpretending for the merits of the Italian composer—would be peculiarly applicable to Stephen C. Foster, the American song writer.

"Toll the bell for lubly Nell,
My dark Virginny bride."

FLORIDA CEDAR SAWDUST FOR DOGS

Some of the readers of GRAPHITE may be well aware of the usefulness of cedar sawdust for the prevention of fleas and other undesirable insects in dog kennels. Other readers who are not, may be interested in the following.

The Dixon Company has a large cedar sawing mill at Crystal River, Florida, and requests come from all around the State of Florida, and from other states, for bags of the aromatic cedar sawdust produced at this mill. Bird dog owners all over that part of the state send regularly for sawdust to use in their dog houses, and all report that it is "a wonderful thing to keep down fleas and other busy bugs which operate to make a dog's life miserable."

One user of the sawdust writes, "I have had excellent success with the cedar sawdust which I received from you, and which I used in my dog kennel. I also used it in packing away woolen blankets and woolen clothing, and found it to be a positive preventer of moths, which are so bad during the summer months here."

Another user writes, "I have used cedar sawdust in my kennels and dog yards for some years. At first I spread it on the ground and floors of the kennel. I found that the fine dust breathed into the lungs was calculated to irritate those parts, and cause my dogs to manifest symptoms of distemper. I then conceived the idea of putting the dust into bags, and covering the floors of the kennels with these bags. I found that this gave perfect satisfaction, and is a sure preventive against fleas, and tends to keep my dogs in a healthy condition. I would not consider being without the use of cedar sawdust for my kennels."

"I am pleased to state that the Dixon cedar sawdust is a great thing in preventing fleas, and in keeping fleas out of the kennels and from getting on the dogs. It is also a great help in keeping the dog's coat clean and in nice shape. I am greatly pleased with the results from using cedar sawdust in my kennels, at which time I had seventy-five dogs."

"We have been using cedar sawdust for three years for our dog kennels, and find it makes an excellent bed for the dogs, and while it is not a flea exterminator, it is a great preventive and we have had to use no other remedy to keep the fleas down. It ought to be renewed every four to six weeks, and you may ship me ten fresh sacks."

Another user states that from his experience extending over several years, he finds that the cedar sawdust furnished from

the Dixon mill works like a charm, and he would not think now of being without it.

The Joseph Dixon Crucible Company is prepared to furnish Florida Cedar Sawdust to those who may desire it.

SUNDAY—SUNDAE

After giving up the attempt to tell the meaning of the word "Sundae," GRAPHITE finds the following in the *New York Tribune*.

Many queries with regard to the origin of the word "sundae" have been made, and a considerable number of theories about it have been exploited. The most popular one seems rather prosaic. Its locale is reported to have been New Orleans, where a progressive but unlucky soda water dispenser found himself one warm Sunday afternoon out of carbonated water, with no chance to renew his supply. There was a constant demand for his services, and after repeatedly answering the embarrassing question why he was unable to produce the drinks, in desperation he hurriedly mixed ice cream and fruit syrups. The concoction greatly delighted his customers. In the following weekdays he had so many calls for "that Sunday recipe" that the idea flashed over him that it would be a good thing to put it regularly on his bill of fare. A well meaning but uneducated clerk, who prepared the menu, did the trick of transforming "Sunday" into "sundae" and the palate tickler has remained "sundae" ever since. No affidavit goes with this story, but it is recounted by one of the oldest soda water apparatus salesmen in the business, and it seems reasonable enough.

METALLIC YARN PACKING

Our London Agents Send Us the Following

The Lead Wool Company, Limited, of Snodland, Kent, (England), are now manufacturing a metallic packing for steam engines, under the name of Metallic Yarn Packing, which has the advantages of a soft packing, as regards the simplicity of application, in combination with the wearing qualities and other advantages which accrue from the use of metallic packing.

Metallic Yarn Packing is manufactured from the best anti-friction metal and consists of very fine fibres which are twisted in the form of a yarn, made in lengths of about 36", packed in tins containing the convenient amount of five or ten pounds. Being suitable for pressures up to 200 lbs., with a melting point of 600° F., engineers will readily acknowledge it to be suitable for both high and low speed engines, and as there is no cutting there is consequently no waste, and what is a great advantage also, it is suitable for all sizes of stuffing boxes, which users will greatly appreciate.

Nothing but "Dixon's Best Graphite" with a very small quantity of light oil is used to treat the packing and thus it is absolutely frictionless and self-lubricating, and for this reason also, while Metallic Yarn Packing presents an even surface to the rods, it does not get hard, and can easily be removed with the usual packing hook.

No doubt the many unique features of the packing will appeal to the many engineers using steam power.

DIXON'S graphite publications sent free upon request.

GRAPHITE

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REAL SALESMANSHIP

A writer in the *Inland Stationer* says:

Do you know why street fakery are so successful in selling an article of a mechanical nature? It is because of the skill with which they operate these devices. It is true that their fluent talk has much to do with their success, but any seller of such articles is more successful when he is able to exhibit something that is skillfully constructed, and which operates so that the person's eye is at once attracted.

I once had a very valuable lesson taught me of the extraordinary effect on the human mind of this deftness in operating a mechanical device. I was sitting in front of a club talking

to six or eight friends, when a neatly

dressed man approached us, and without waiting for permission began showing us an article he was selling. It was highly nickel-plated and had two or three parts. He began taking the thing apart and putting it together with such rapidity and so much skill that it actually became fascinating to watch him. We became so interested that we gathered into a little group, and the salesman was soon the center of interest, with every man's eyes focused upon him. He wound up by selling every man of that group one of the little devices which, I remember, cost about twenty-five cents each.

Now, the curious part of it all was, there was no man in that party who actually needed or cared much about the device. They all bought because they were impressed with the ease with which the little gimcrack was operated. As one man said, "That's pretty slick, isn't it?" and another, "That's mighty clever." They gave no thought to the *utility* of the article. They did not even ask themselves whether they really needed it or not. Each man bought because he was properly approached, properly interested, and actually fascinated, with the skill displayed by the salesman in operating the little device.

When we come to think it out, we must acknowledge that this is a very excellent lesson for all salesmen. That it is not only necessary to know your business, but to know every single article you handle, and how to handle it, to learn its good points, and why it is better, and to be able to give the customer the proper information regarding that article.

WHAT REGULAR SAVING WILL DO

To all the men who work for wages or on salaries their only hope for a peaceful old age and for a life free from racking money cares is to provide beforehand for the future. They should take no risk. When they speculate they stake their family's future and their own peace of mind against a few dollars. Even were the chances equal—and in the case of a small man the odds are always against him—the risk which he takes is vastly disproportionate to any possible gain.

Few men ever heard of progressive compound interest and still fewer know what it does. One dollar deposited in a savings bank which pays four per cent. will amount to \$2.19 in twenty years. This is simple compound interest. But how many men know that if they deposit \$1 every year, the value in twenty years will not be \$2.19 but \$30.97?

Any man or woman who is earning wages at all can save \$1 a week. That money deposited in a savings bank for twenty years will amount to \$1,612. A deposit of \$5 a week will amount to over \$8,000. The annual interest on this at four per cent. would be \$320.

Thus the man who deposits \$5 a week in a savings bank can, after twenty years, draw out \$6 a week and still leave to his wife and children at his death all the money that he deposited and more than half as much more. There is no paradox or catch in this. It is a plain, simple mathematical statement of what any savings bank will do.

Every wife should read these figures and go over them for herself. They are accurate. The only necessity is to make the deposits regularly. If, instead of discontinuing the weekly deposits at twenty years, they are continued for ten years more, every dollar a week will have become \$58.83 and the \$52 a year will have become over \$3,000. For every dollar which had been deposited \$2 a week can be drawn out without impairing the principal, which has doubled.

It takes time to make money this way, but the result is certain. There is no secret about it, no mystery, no allurements, no dazzling speculation. All that it requires is industry and a little self-denial every week. It pays better than any gold or copper mine, than any pool room or bucket shop.

—N. Y. World.

A FREQUENT cause of noisy gears results from the renewal of a pinion, which is put to mesh with an old gear that is worn. At no time is an application of Dixon's Graphite Cedar Fibre Grease more essential or better appreciated. It cushions the gears and prevents noise and wear.

ESTABLISHED 1827.



INCORPORATED 1868.



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JERSEY CITY, N. J., U. S. A.

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CHANGE IN OFFICERS

At a meeting of the Board of Directors of the Joseph Dixon Crucible Company, held on Monday, December 21st, Vice President George T. Smith was elected President to fill the vacancy caused by the death of the late Edward F. C. Young, and Mr. Wm. H. Corbin, Counsel for the company, was elected Vice President.

ENGINEER'S TEST OF DIXON'S FLAKE GRAPHITE ON A HOT FIVE INCH SHAFT

The Chief Engineer of a large and well-known oil company in the West writes us as follows:

"You may be interested in knowing of the most satisfactory test I have lately made on an engine shaft five inches in diameter, turning 200 revolutions per minute.

The bearing was badly cut from overheating; I mixed some of Dixon's Flake Graphite with Arctic Cup Grease, half graphite and half grease by measure; this mixture I applied, and found a decided improvement. So satisfactory was the re-

sult with the small quantity that I had that I asked the superintendent if he would not order some. He sent to Denver for a ten-pound can, and I used it on the journal bearing for about three months. Apparently the graphite has built up and filled all the cutting made during the time that I had trouble with the overheating. Examination shows that the bearing is even smoother than when new.

We have no trouble in getting the Dixon products in Denver, and there seems to be a good demand for them. Years ago I was a stationary engineer at Pittsburg, Pa., and used Dixon's Graphite there for a number of years, and therefore I well knew the quality of the Dixon products before I came out here."

A FINE RECORD FOR BELTS

Last month the Dixon Company for the first time in eighteen years took up a belt in one of its mill rooms.

For eighteen years about thirty belts in that room have been run constantly; the belts are about 25 feet in length and 6 inches in width. There is a great deal of graphite dust in the room, yet these belts have run satisfactorily without breakage or without being taken up for eighteen years.

The belts are regularly treated with Dixon's Traction Belt Dressing, which is in paste form and which, we believe, is the very best leather preservative belt dressing made anywhere.

It has a large and increasing sale in many countries abroad, and is most favorably known throughout the United States.

Emerson has said that man is as lazy as he dares to be, and probably that is the reason why most of us find it far easier to make use of a solid belt dressing, that is, one in stick form, which can be held against a running belt.

The really proper belt dressing is one that keeps the belt soft and pliable, and at the same time fully preserves the texture of the leather, and this is what Dixon's Traction Belt Dressing does.

GOOD PENCILS A NECESSITY

We read in an exchange that without question the most widely used article in business today, and at the same time one to which the least attention is paid, is the lead pencil.

To the average man at first thought the lead pencil is a lead pencil and nothing more, but when one stops to consider the many uses to which pencils are applied and how important they are as aids to turning out good work, a thinking man will find much to consider in selecting his lead pencils.

There are today on the market as many brands of lead pencils as there are kinds of drink, and we all know that the number of different kinds of drink is almost beyond computation.

The ideal lead pencil should have a tough, smooth lead, a lead that will wear long without resharpening. The wood should be of the straight grained Florida variety, so that it will cut evenly, and not crossgrained.

If anyone is looking for a pencil of this kind, he should ask his stationer for Dixon's American Graphite, Dixon's Anglo-Saxon, or Dixon's Eldorado, or for that matter any pencil that bears the word Dixon.

These pencils cost but a trifle more than the ordinary lead pencils, and they are unquestionably more economical in use.

PREVENTING CORROSION OF STEAM MACHINERY

By W. H. WAKEMAN.

Chapter VIII.

Fig. 33 illustrates the second type, or reaction turbines. Steam from the boilers enters through the pipe 2 and thence enters the passage 3 where it operates on the smaller blades, passing to the right until it is discharged into the passage 4, where it turns the larger rotars, still moving towards the right hand until 5 is reached, which admits it to the largest rotars provided for this machine. This ingenious action permits the steam to expand freely without excessive condensation, or re-evaporation.

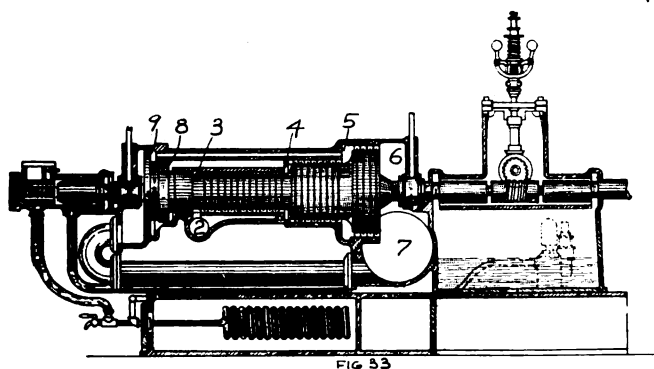


FIG 33

After developing power on the largest rotars shown it goes to the exhaust passage 6 and thence to the exhaust pipe 7. As the steam is constantly forcing the rotars towards the right hand, it causes the shaft to be forced in this direction, which would cause excessive friction if means were not provided for preventing it, but the balancing pistons 8 and 9 are provided for this purpose. The area acted on by pressure from 3 is sufficient to balance the machine and reduce friction to a

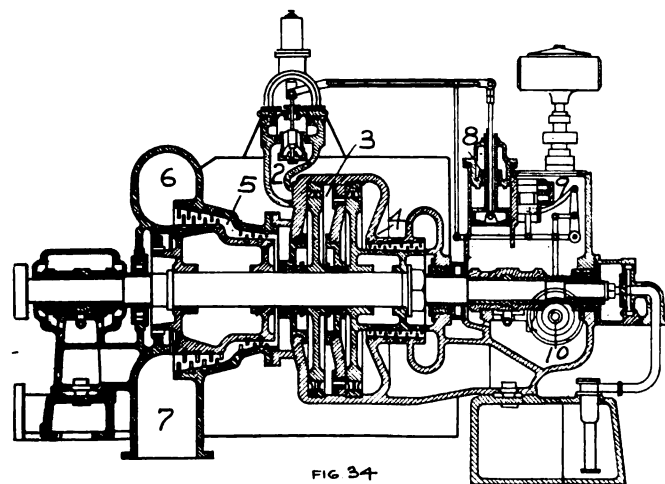


FIG 34

minimum. Steam used for this purpose is exhausted into 7 through the pipe shown. The coil of pipe under the turbine is for the purpose of cooling oil that is used on the bearings, as otherwise it would become overheated by contact with steam heated surfaces.

Fig. 34 is a turbine in which the impulse and reaction principles are combined to secure certain good qualities. Steam enters through the throttle valve 2 and acts on the two impulse wheels 3, after which it is exhausted to the reaction rotar 4, and from thence it goes to the larger reaction rotar 5, thus affording ample opportunity for expansion. It then goes to the exhaust chest 6 and to the large exhaust pipe 7 below it. The admission of steam through 2 is controlled by the piston 8, which is operated by means of the valve 9, the position of which is determined by motion of the worm wheel 10. The adoption of these principles eliminates any thrust of the shaft in either direction without providing a special device for this purpose, and at the same time makes it possible to include a turbine of given power in much less space than would otherwise be required.

Fig. 35 is an enlarged view of a turbine governor, the design and operation of which are as follows. By the throttle valve 2 steam under high pressure is admitted from 3 into 4. When the turbine is at rest or even when running below its regular speed the balanced throttle valve 5 is open, but when the machine is running full speed, or a small per cent. above normal, 5 is closed indirectly by action of the fly balls shown, thus diminishing or entirely shutting off the supply of steam to the

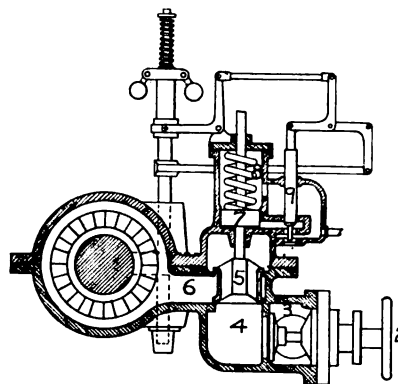


FIG 35

steam chest 6, thus preventing further increase of speed, or reducing it to normal conditions as required. The throttle valve 5 is controlled directly by action of the piston 7, working in a suitable cylinder as shown. When the throttle valve is to be closed the spiral spring 8 forces it downward, but when its motion is to be reversed the fly balls act through the levers shown to open the auxiliary valve 9, which admits steam under 7 and thus raises 5.

These illustrations show that the modern steam turbine is a complicated machine, consisting of many separate parts which require constant and intelligent care and attention. When one of these machines is to be shut down for even a few weeks, the internal parts should be treated with Dixon's Graphited Oil No. 682. It consists of heavy machinery oil with fine graphite that does not readily separate from the oil and settle to the bottom of the can, but remains in suspension, therefore if poured into the casing of a turbine it will prevent corrosion wherever it touches the metal. Particular attention should be paid to this precaution in cases where cylinder oil is not used in every day service, as the internal parts begin to rust and corrode almost as soon as steam is shut off. On the other hand, if a first class brand of oil is used in the cylinder every day, corrosion will not begin so quickly.

When a turbine is to be shut down for several months, the internal parts ought to be thoroughly inspected in order to discover cracked or broken parts which ought to be repaired while there is ample time to do the work properly. Then cover the whole with Dixon's Waterproof Graphite Grease and assemble the machine ready for service.

(To be Continued.)

JEFF BEAGLES' LITTLE OLD TIN CUP

Mr. Jeff Beagles has been at work at the cedar mill of the Joseph Dixon Crucible Company of Jersey City, for twenty-five years. For twenty-five years he has been numbering and branding cedar cases. And for twenty-five years he has been using the same little (now) old tin cup to contain the black paint. This little old tin cup item may not mean much to some people, but to a close observer it means much. It is a key to the character of the man. Mr. Beagles is just as methodical and economizing in all his other habits, and enjoys the respect and confidence of his employers, and those who work under him as foremen.—*Crystal River (Fla.) News.*

NEW MARKET, IND., December 10, 1897.

To Our Customers and Friends:

The time of the year is at hand when everyone should square up their old accounts and start the new year with a clean record. We wish to say first that we shall send this statement to each customer whose name has been on our books the past year. We thank you kindly for your trade for 1897. We have worked hard to get you what you wanted and to sell it at as close prices as good business judgment will admit. We have tried to carry you over the tight places and given you time to pay for the goods, and sometimes it has been very hard on us to do so. Please remember, kind friends, that your account may be only \$5, and you say to yourself, "He doesn't need it;" just take two hundred customers owing us \$5, and you have \$1,000 on the books not worth one cent to pay bills or to buy goods. The nearer cash you keep the closer we can sell you; the more goods we can keep and so have what you want when you call for it. But act the man and don't get hot when your merchant sends you a statement of your account.

No gentleman ever gets mad at notice that the man he owes wants his money. All business men get them every thirty days. Promptness builds up credit and makes up friends. The account we send you may be wrong; if so, we want to right it. In 1898 we shall not credit any one over thirty days except by special agreement, and only to those who the past year have paid their bills promptly and as they agreed to do. We want no man on our books who is not worth 100 cents on \$1. We aim to do a cash trade, but to our friends that want a few days time we will do our best to stay with you, but don't forget that we want our money at the time agreed on—no more, no less.

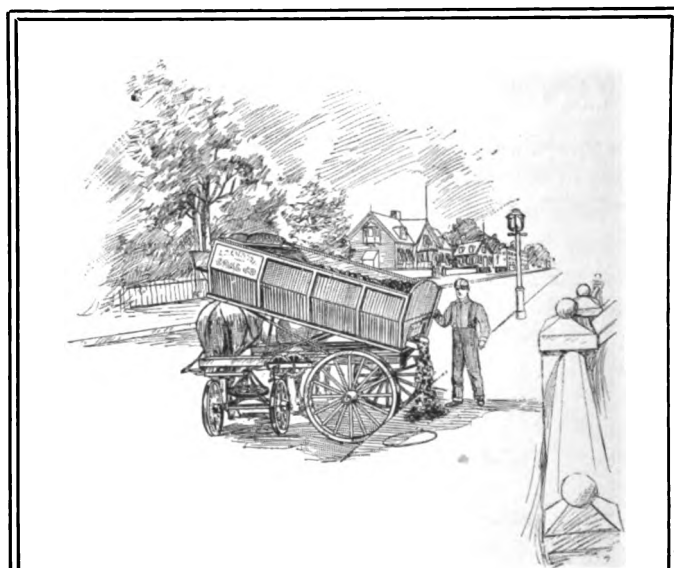
If you need charity come and tell us and we will give you our last loaf of bread; but don't take our goods and not pay for them; it is worse than stealing. All accounts on our books December 26th unpaid we shall place with some one to collect by law.

Again we thank you for so large a share of your trade and hope the coming new year will bring to your fireside many happy hours and a prosperous year, and that this letter will be taken kindly and in the same spirit in which it is written, not for you personally, but for one and all as the shoe fits, and then we want to ask you as a special favor to help us at a time when we are needing help. We have not worried our customers concerning their accounts as long as it was possible to avoid it, because money was tight and hard to get. We ask you to kindly take this personally to yourself; put yourself in our place. You may argue, "My account is a small one; they can get along without it." That is not true; it is just yours we want and need. Suppose each one of you were to put it in the same way, where would we be? We are always glad to make you the accommodation of credit. Your account is not large; you owe us but \$—; won't you kindly let us have it at once? We assure you that we need it, and will be very grateful.

Very sincerely yours,

R. G. CRIST.

THE MANY orders lately received from street railroad companies for five to ten barrels of Dixon's Wood Grease indicate that if better lubrication and cessation of noise is desired, that Dixon's Wood Grease is the material to use.



For Severe Service

Dixon's Graphite Axle Grease proves its superiority under severe conditions—where ordinary greases fail. Lasts longest, does not harden in winter. It will pay you to use it.

JOSEPH DIXON CRUCIBLE CO.

JERSEY CITY, N. J.

ARE ANY OF US ORIGINAL?

A writer to the *New York Times* asked whether Elbert Hubbard was guilty of plagiarism in the reputed epigram, "The dead carry in their clenched hands only that which they have given away."

Several correspondents made prompt answer that the authorship belongs properly to Joaquin Miller. We reprint one of the replies and also one from a lady ascribing the lines to an old Sanskrit proverb.

New York Saturday Review of Books:

Neither Mr. Ingersoll nor Mr. Hubbard is the author of the sentiment ascribed to Fra Elbertus by Mr. Leigh Mitchell Hodges in a report of a lecture in this form: "The dead carry in their clenched hands only that which they have given away." Your correspondent, Mr. Converse Cleaves of Philadelphia, is informed hereby that Joaquin Miller is the author. In his little poem on the death of Peter Cooper, Mr. Miller wrote, third stanza:

And wisest he in this whole wide land
Of hoarding till bent and gray;
For all you can hold in your cold, dead hand
Is what you have given away.

The poem may be found in Stedman's "An American Anthology," or, better still, in Joaquin Miller's collected works, which appear to be too little known in this Eastern country.

Not long ago I observed in *The New York Times Saturday Review of Books* a query as to the authorship of the lines, "In men whom men condemn as ill," &c. It would seem that such lines, which have become a part of English speech the world over, should not continue to float about Eastern America without parentage. Mr. Miller once told me that he had seen these famous lines of his in a Boston magazine, attributed to a New England lady poet.

Let me use this opportunity to urge that your readers make the acquaintance of Joaquin Miller, a living American poet who has written half a dozen of the finest lyrics in the language. For some reason he seldom or never writes for the Eastern magazines; yet one drop of ink from his pen contains more poetry than all the rhymed rubbish that rots in the pages of the Eastern magazines from year to year.

New York, July 21.

ROBERTUS LOVE.

New York Times Saturday Review of Books:

In reply to query, "Ingersoll or Hubbard?" by Converse Cleaves (Philadelphia) in the last issue of *The New York Times Saturday Review of Books*, I reply, Neither. The quotation is from old Sanskrit proverbs, (India) and, properly translated, reads: "All we can hold in our cold, dead hand is what we have given away."

"New York, July 20.

EMILY NOBLE"

AUTOMOBILE LUBRICATION

From the many inquiries that we have been receiving from jobbers and dealers concerning Dixon's Motor Graphite Lubricants, we are encouraged in the belief that users of automobiles have found, as they should, that Dixon's Graphite Lubricants are indispensable if the machines are to "go."

AUTOMOBILE RULES FOR PEDESTRIANS

In a very clever little sketch, called "The Automobile," by George Fitch, that originally appeared in *Collier's*, the following rules occurred. One can hardly fail to appreciate their humor.

Rule One.—Pedestrians crossing boulevards at night shall wear a white light in front and a red light in the rear.

Rule Two.—Before turning to the right or left they shall give three short blasts on a horn at least three inches in diameter.

Rule Three.—When an inexperienced automobile driver is made nervous by a pedestrian, he shall indicate the same, and the pedestrian shall hide behind a tree until the automobile tires.

Rule Four.—Pedestrians shall not carry in their pockets any sharp substances which are liable to cut automobile tires.

Rule Five.—In dodging automobiles, pedestrians shall not run more than seven miles an hour.

Rule Six.—Pedestrians must register at the beginning of each year and pay a license fee of \$5 for the privilege of living. There shall be no rebate if they do not live through the entire year.

Rule Seven.—Pedestrians will not be allowed to emit cigarette smoke on any boulevard in an offensive or unnecessary manner.

Rule Eight.—Each pedestrian before receiving his license to walk upon a boulevard must demonstrate before an examining board his skill in dodging, leaping, crawling, and extricating himself from machinery.

Rule Nine.—Pedestrians will be held responsible for all damages done to automobiles or their occupants by collision.

"DOUS"

Our Mr. Reed, of the School Department, who hobnobs with superintendents, principals and teachers of the schools of the land, and who keeps polished up in all things educational, propounds the following to us:

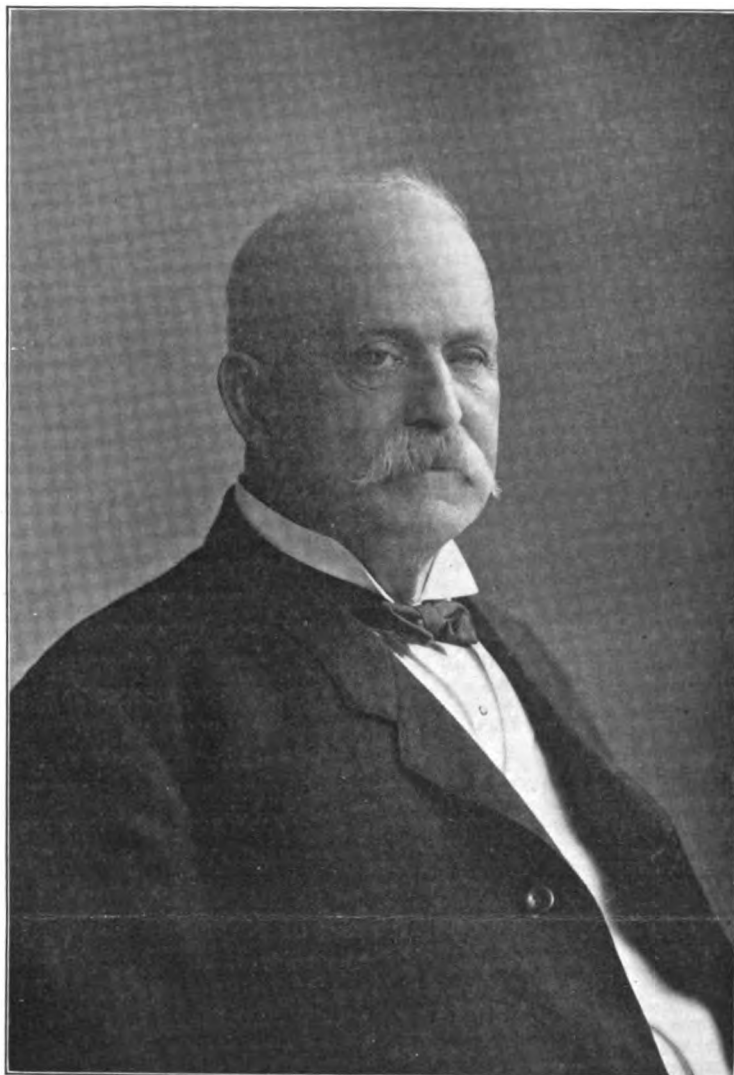
The school people say that there are three words in the English language of common everyday use that end with the four letters "dous." With that reassuring smile on his face for which Mr. Reed is so well known, he mentions two of the words, and then adds, "Now I have told you of two, what, please, is the third word?" We don't believe there is a third word unless it is a swear word. Nevertheless, Mr. Reed assures us that there is a third and common word, and as the Dixon force big and little have given it up, possibly some of our readers will be glad to furnish it.

SNOW FOR EGGS

Do all of the sisters who live in places having snow in winter know this: "When eggs are scarce a tablespoonful of snow will take the place of one egg?" Try it and, be convinced.

—*Harper's Bazar.*

With hens on a strike and eggs at sixty cents per dozen it is cold comfort to be told that "a tablespoonful of snow will take the place of one egg." How about a Tom and Jerry, or a hot egg rye?



PRESIDENT E. F. C. YOUNG AT REST

There was laid at rest on Wednesday, December 9th, a man of ceaseless activity and of world wide reputation as banker, manufacturer, politician, organizer, business man, diplomat, philanthropist, friend.

No man could very well cover a wider field or cover it more successfully than did Mr. E. F. C. Young.

As banker, the First National of Jersey City, of which he was president, stands first in the state and his close associates in banking circles were of the most eminent in the country, and his advice was sought by his associates.

As manufacturer he was connected with several important industries and kept in close touch with the factories and selling force and methods as well as with the financial departments.

As politician, diplomat, he was successful in guiding his party to many victories, though never seeking office for himself.

As an organizer and business man his ability was shown when, as a receiver for several almost hopelessly involved concerns, he succeeded in pulling them out of their financial difficulties, and placed them once more on strong business

foundations, on which, with his leadership and advice, they became greater industries than ever before.

As philanthropist and friend he can only be measured by the hearts that have bled in sorrow at his death and the tears that have flowed in public and in private.

Many of his charities, kind deeds and helpful words have been made known by the grateful recipients, but thousands of others have been acts of his daily life, have accompanied him to his grave and gone on beyond to testify for him before the Throne of Grace.

Edward Faitoute Condict Young was born on a farm near Morristown, Morris County, N. J., on January 25, 1835. He was of English descent on his paternal side and his maternal grandparents were Scotch. The first of the Young family to come to America was the Rev. John Young, the banker's great-grandfather, who settled in Connecticut in 1638. Two years later the clergyman moved to Long Island, making his home at Southold, where he died in 1692, at the age of 71. There are many gravestones in the cemetery at Southold bearing the name of Young, spelled Youngs in many cases.

Mr. Young went to Jersey City at the age of nine. He attended a public school and was a pupil of the late George H. Linsley, for more than half a century principal of School No. 1 in York St. He started his financial career in 1852, at the age of 17, as a clerk in the Hudson County Bank. He was promoted to receiving teller in 1853 and paying teller in 1858. In 1864 he went to the Mechanics' and Traders' Bank, and on January 2, 1865, when the bank was reorganized as the First National Bank of Jersey City, he became assistant cashier of the new bank. Nine

years later he was made cashier, and in 1879 he was elected president of the institution, a post he held continuously until his death.

Soon after Mr. Young reached his majority he was appointed Collector of Assessments. He was elected City Treasurer on the Democratic ticket in 1865 for a term of five years. He served a term as a member of the Board of Aldermen (1872-73), winning his election in the Fifth ward, which was strongly Republican. He was elected to the Hudson County Board of Chosen Freeholders in 1874, and in 1876 became the first Director-at-Large of the board.

Mr. Young was a Democratic elector in New Jersey in 1880 and voted for the election of Gen. Winfield S. Hancock for President. In 1889 he was appointed State Railroad Director, serving a term of four years. On July 23, 1887, the late Supreme Court Justice Manning K. Knapp, who presided in the Hudson Circuit, named Mr. Young as a Tax Adjustment Commissioner under the provisions of the Martin act. He continued in this position until during the administration of ex-Mayor Mark M. Fagan, when he resigned.

In 1892 Mr. Young was a candidate for the nomination for Governor, but was beaten in one of the most exciting Democratic

conventions ever held in New Jersey as the result of a campaign inaugurated against him by ex-United States Senator James Smith, the late Gov. Leon Abbett and the late Congressman Allan L. McDermott. The nomination went to George T. Werts, then a member of the New Jersey Supreme Court, who, it was said, didn't want it but was forced to take it. It was believed at the time that Mr. Young would have won out had the late United States Senator John R. McPherson, who was a power in New Jersey politics, been able to reach the convention at Trenton. McPherson was cooped up on a steamship which had been held on Quarantine in consequence of the cholera scare and he was unable to get off, although strenuous efforts were made to induce the authorities to let him go ashore. Mr. Werts was elected.

Mr. Young continued to be a power in the Democratic party in an advisory capacity until failing health caused him to drop out two or three years ago.

Mr. Young was appointed receiver of the Joseph Dixon Crucible Company, which became involved under the management of the late Mayor Orestes Cleveland, and as a result of his great business ability the concern was placed on a paying basis in a few years. It is now one of the most successful industries in the State. When the receivership ended he became president of the company.

Mr. Young and the late Charles B. Thurston financed the old Jersey City and Bergen Street Railway Company, which operated a horse car system in Jersey City, and in 1893, with the late B. M. Shanley of Newark, organized the Consolidated Traction Company, which acquired the horse car lines and began the running of trolley cars. Mr. Young was president of the company. The Consolidated was leased to the North Jersey Street Railway Company, which controlled the street car lines in Jersey City, Newark, Elizabeth and elsewhere, and Mr. Young continued a leading factor in the company until all the lines were absorbed under leases by the Public Service Corporation of New Jersey.

Mr. Young's associates in the trolley enterprises included Thomas F. Ryan, John D. Crimmins, William L. Elkins, A. B. Widener, A. J. Cassatt, Clement S. Griscom, William C. Whitney, John J. Waterbury, Frank Thompson and David Young.

He was largely interested with the late Vice-President Garret A. Hobart, Mr. Shanley and others in the extension of the Jersey City, Hoboken and Paterson Street Railway Company, which operated trolley lines connecting Hoboken, Rutherford, Passaic and Paterson.

Mr. Young enjoyed the confidence of the courts and was frequently appointed receiver of embarrassed companies. At one time he acted in that capacity for fifteen different concerns.

He was the controlling force in the First National Bank, the New Jersey Title Guarantee and Trust Company and the Pavonia Trust Company, all of Jersey City, and the Bayonne Trust Company of Bayonne. He was largely interested in other banking institutions in Hudson County, but it is understood that in recent years he retired as much as possible from active participation in their affairs.

He was an officer in the following companies: Acker Process Company, vice-president and director; American Graphite Company, president and director; First National Bank of

Jersey City, president and director; Joseph Dixon Crucible Company, president and director; Pavonia Trust Company of Jersey City, president and director; North Jersey Land Company, president and director.

A partial list of the directorates to which he belonged is as follows: Bankers Trust Co. of New York, Bayonne Trust Co., Bergen and Lafayette Trust Co., Jersey City; Bowling Green Trust Co., New York; Brooklyn Annex, Colonial Life Insurance Co., Hoboken and Manhattan Railroad Co., Hudson County Gas Co.; Liberty National Bank, New York; New Jersey Title Guarantee and Trust Co., Jersey City; New York and New Jersey Railroad Co., North Jersey Street Railway Co., Public Service Corporation of New Jersey, People's Safe Deposit and Trust Co., and the West Hudson Trust Co., Harrison.

He was also a member from early manhood of old Trinity Methodist Church in York Street. He never withdrew his membership, although he later became an attendant at St. John's Episcopal Church on Jersey City Heights. He was a vestryman of St. John's for twenty-five years, retiring from the office several years ago. In the early '90s he gave \$25,000 to the building fund of Emory Methodist Church, Bergen and Belmont Avenues, and retained a pew in the new church up to his death. Mrs. Young was also a generous supporter of Emory, purchasing a \$6,500 pipe organ for the church. Several months ago Mr. Young contributed \$1,000 for a bell for All Saints' Roman Catholic Church at Pacific and Communipaw Avenues.

Mr. Young was one of the organizers of the Children's Friends' Society (the Children's Home in Glenwood Avenue), which resulted from the finding on a cold night in the winter of 1863 of two small motherless children cuddled up fast asleep in each other's arms in a delivery wagon. The children had been abandoned by a drunken father in the city streets. The Rev. R. L. Dashiell, James Gopsill, later Mayor of Jersey City, Mr. Young and others took up the matter and on March 22, 1864, an act was passed by the Legislature creating the society. Mr. Young was the first secretary of the organization and was a member of the board of trustees for many years.

Mr. Young married Miss Harriet Strober on August 7, 1853. He is survived by his wife and two children, Mrs. George T. Smith and Edward L. Young. Mrs. Young also is still living.

Mr. Young was a member of the Carteret Club, Jersey City Club and Cosmos Club, all of Jersey City; the New Jersey Athletic Club of Bergen Point, the Manhattan and Lawyers Clubs and the Chamber of Commerce of New York City; the New Jersey Order of Founders and Patriots of America, the Washington Association of Morristown and other organizations.

The fact of his career that was most characteristic and the one that he always spoke of with pride was that he had identified his career entirely with Jersey City. He lived there from his boyhood to the hour of his death. He was identified directly or indirectly with most of the leading business enterprises of the city and did great service in building up its prosperity. When he engaged in outside ventures he made Jersey City their headquarters. His office in the First National Bank was a centre from which great and intricate interests, political and financial, centered for a quarter of a century and for the five years or so at the opening of this century. Mr. Young was without doubt the most influential man in the State of New Jersey.

At the funeral upwards of a thousand people gathered in the church and half as many more were standing outside, unable to get even within hearing distance of Rev. E. L. Stoddard, rector emeritus of St. John's Episcopal Church, where the services were held.

The simple service for the dead was used, the choir giving the anthems and those present joining in the singing of "Abide With Me." Rev. G. D. Hadley, rector of the church, read the Scripture selection and offered prayer. Then followed the eulogy by Rev. Dr. Stoddard. He said:

"A great man belongs not only to his family, not only to his friends, but to the community. Living, his acts and words are ever before the world, and dying, they cannot be hid. An obscure character, even though it be a saintly one, may be hurried to a secret burial. It demands only the passing tribute of a tear and a tender eulogy of its holy life and end. But to a masterful personality we owe something after death, because we owed so much before death. He must be buried with a certain publicity. The world must be permitted to honor his remains, and some fitting tongue—would that in this case it were a more worthy one—must speak for those who would fain utter their tribute of gratitude and praise, but are unable. This is the reason for such words as mine today. We come to bury not only a husband, a father, a Christian, but one of the foremost men in the State, one known and sought over wide areas of territory, one whose name has been for half a generation on the lips and in the hearts of our citizens. It is not just to these thousands, who have been aided or inspired by him, whose finances he has guided, whose destinies he has directed, to bury him with a meagre or hasty pomp, where no honors can be rendered and no eulogy can be sung. Therefore we are here, in a spacious temple, with hosts of mourners, and therefore this discourse, more formal and extended than the usual pious utterances spoken beside a Christian bier. I would gladly speak of Mr. Young as a friend, a counselor, a host, at whose fireside I have been welcome for more than thirty years. I would gladly speak of him as a church man, a church officer, upon whose fidelity one could always depend, always in his place of worship, always, when in office, at the church councils. I would gladly bear witness to his inherent integrity and to his loyalty to the creed and precepts of the church. But these matters concern more immediately his family, or at least the inner circle of his friends; and so because on this occasion the time is short, I will but touch in passing upon the noble characteristics, the most noble that can attach themselves to man, and move on to his public life. For I know that you who are here represent in large part the great sphere of his activity outside his family and his church. You have come to honor a man for a high, strong, successful public life, which has resulted in large public benefits. In these words, therefore, I address myself more especially to you, as I speak of Mr. Young pre-eminently as a citizen. For more than sixty years his life has been identified with Jersey City. He has never left it, never lost faith in its possibilities, never ceased to interest himself in its welfare. I speak for those who are neither of his faith nor his politics when I quote the words: 'More than any other ten men, Mr. Young has benefited this, his chosen city, by his character, his financial and industrial enterprises, the attraction which he has given to capital and the influence of his home.

He well deserves the title of civic patriot.' It has been said that he has never shown his interest, by the erection in this city, of any splendid monument of public utility. That may be true. But in this world we must allow men to choose their own way of showing their regard. Mr. Young's attitude toward Jersey City sprung, like so much that he did, from a sense of justice. He felt that a city in which he had made his fortune, whose citizens had sustained and honored him in his labors should be his home, the arena of his best activities. Unlike so many, who, having made their fortunes here, have turned their backs on Jersey City, carrying with them their spoils or leaving them in part that from them they might draw revenue without giving recompense, Mr. Young felt it a duty as well as a pleasure to remain and to aid the place where he had prospered, by his expenditures, his counsel and the personal direction of his great enterprises. Not only this, but he desired to make it a family home, where his descendants should perpetuate the name and the industries by which he was known, carrying onward at once his memory and his works. To that end he built not only his own mansion, but those of his children.

"I think that sort of spirit is worth far more to a city than a monument of stone or bronze, whose giver has forsaken it. Mr. Young was a good citizen in that his greatest successes were identified with the interest of the city itself. He was president of a score of institutions, director in many more, interested in still others, but the three which were his pride and to which he gave his chief time, were those of his native city. The first was so identified with him and became so successful under his direction that it was known quite as widely as 'Young's bank' as by the name of the First National. In the Title Guarantee & Trust Co. we have the first institution of its kind in the city, the father of many successes and one of great benefit to our people. In the third, the Dixon Crucible Co., we see a collapsed industry reorganized, rehabilitated, virtually remade and set on a triumphal industrial career, an enterprise which has led men to speak to me in praise of its president as far East as Maine and as far West as the Mississippi. Undoubtedly those three benefited Mr. Young. It would seem, however, that only a short-sighted and unbalanced demagogue could murmur at the ample recompense which these industries brought their promoter, while he refused to see in such success an increase in the wealth, the happiness and the prosperity of a great community. Again Mr. Young was a moral citizen. I suppose that he was a very rich man. But his riches never led him into extravagance, profligacy nor indifference to the welfare of his kind. He had his handsome home and the comforts which belong to wealth, but unlike so many millionaires, his life of seventy years has given rise to no scandal, to no reckless improvidence, to no act or words which could outrage public sentiment or lower public morals. He has led a simple domestic life. He has set the example of a good husband, good father, good friend, good citizen. He has been on the side of civic virtue. It is not well to forget to honor a man whose wealth has been so employed for an entire generation as to cause no financial disturbance and no moral decline. He was a church-going citizen. When in town and in health he was never out of his place. And here again, unlike so many rich men, he was on the side of right. His counsel and his example led men to honor God and to respect

His holy day. For this foremost man of a city, its richest, its leading citizen to take this unvarying public stand for the sacredness of the Lord's Day and integrity of life is to merit our thanks as citizens as well as Christians, for after all it is even more true today than when a prophet spoke it 3,000 years ago, that "Righteousness exalteth a nation" and that "The fear of the Lord is the beginning of wisdom." Mr. Young was a democratic citizen.

"You remember his desk, at the entrance of the bank, open for all the world. He did not believe in interior chambers with liveried sentinels and guarded doors. He was a citizen president and took the ground that whoever wanted to see him was the man he wanted to see. He remained to the last true to this principle, and it was less than a year ago that I saw a merchant prince and a tramp looking for a job, each waiting his turn. It seemed to me a mistake, a waste of valuable time. It seemed dangerous, for in these days of fanatics, when a blow or a shot could have been so easily given. But he thought differently, and on his last well day was the same accessible, courteous gentleman that he had been thirty years before. The result was a great popularity and an enormous clientele. Thousands of poor men in these thirty years have entered that office and asked his counsel or his aid. Thousands of widows and women in trouble have gone there feeling, as one said to me, 'I was always sure of seeing Mr. Young, always sure that he would listen kindly to me, always sure that I could trust implicitly to whatever he said.' For a man with twenty corporations on his hand to establish and retain a clientage like that, is little short of miraculous. It was true citizenship. He was a good citizen in his charities. He was so exceedingly careful lest his left hand should know what his right hand did that I, as his rector, know little about his gifts save that they were very large. No man gives away his money, I suppose, as other men often think he ought to. We can always advise millionaires greatly to their own profit as we think how to dispense their charities. Mr. Young had his own ideas. Men did not always agree with him. But that did not make any difference to him in his application of his principles, and it should not make any difference for us in our appreciation of the fact that he was a very charitable man. His habit was to give generally. He scattered his benevolence on all sides. He believed, as most rich men do, in helping those who will help themselves, if they can, and in giving so as to incite others to give, forming thereby, as it were, a community of benevolence. Hundreds of people and a score of institutions are poorer today because of his death. He sowed his good seed broadcast, made innumerable hearts lighter and bore the burden of many a charity of which the world knew nothing. He was a good citizen because he was catholic in his nature. Accessible to all, charitable to all, a citizen of a city, not of a set, or a clique, or a club, he was counselor of all. He was a Democrat, and yet the leaders of every political party went to him for advice, and because he gave it in far-sightedness and honesty they continued to go. To see a Republican asking advice or seeking information of a Democratic politician was a queer spectacle, yet it happened. It simply showed that Mr. Young was something more than either a Democrat or a Republican, and chose his political affiliations not through blind partisanship but from principle, and those who knew the man knew that however severe his political con-

tests, they were waged for what he thought the best interest of the city or the State. His control of a political situation, like his control of many a financial situation, was little short of marvelous. But as in the latter, his desire was to be absolutely honest, so in the former. Even his enemies admit that he sought the prosperity of the city that he loved. He was a man greatly gifted by nature. No education can ever make such men. They are born. Mr. Young's wisdom, his sagacity, his intuitive grasp of great principles, his financial acumen, his power of instantaneous decision, so that he could answer ten different and important questions in twice ten seconds and answer them right, were natural gifts. But his high use of these powers was his own. His whole conception of his duty toward this city and its people, his determination



MAUSOLEUM WHEREIN THE REMAINS WERE LAID AWAY.

to be their father and friend, his widely extended and numberless charities, his adherence to the great truths of life, the honor which he paid to the Lord's Day, his quiet, simple, private life, were all his own. Four words may perhaps describe his character. Toward business men he was "just." In financial matters he was "honest." Toward God he was "faithful," toward his fellow men he was "kind." We thank God when it pleases him to bestow on any of his children exceptional gifts. But when that child receives those gifts as a trust and seeks to use them for the good of men and the glory of the giver, then we honor the man—nay, more, we can but love him, and we hasten to render him respect, as we do this day, and to pray that the God of Nations will not leave this city, take up the mantle of the dead and carry on his labors."

After the eulogy the choir sang, "Lead Kindly Light," and Edward Boys sang the solo, "I Heard a Voice From Heaven Say," from the committal service, and then the casket was opened for the final view of the remains. It took nearly an hour for the church to clear and then the body was carried out, followed by the pall bearers and the family.

From the church the procession, headed by the rector emeritus and the rector, moved on to Bay View Cemetery, where, after a brief prayer and a selection by a quartet from the church choir, the body was placed in the family vault.

DIXON's graphite publications will be sent free to anyone upon request.



A THREE-SIDED DWELLING OF CANVAS

Shelter tents make cosy and comfortable abodes for recreationists in northern Maine, even when the weather is decidedly "sharp"

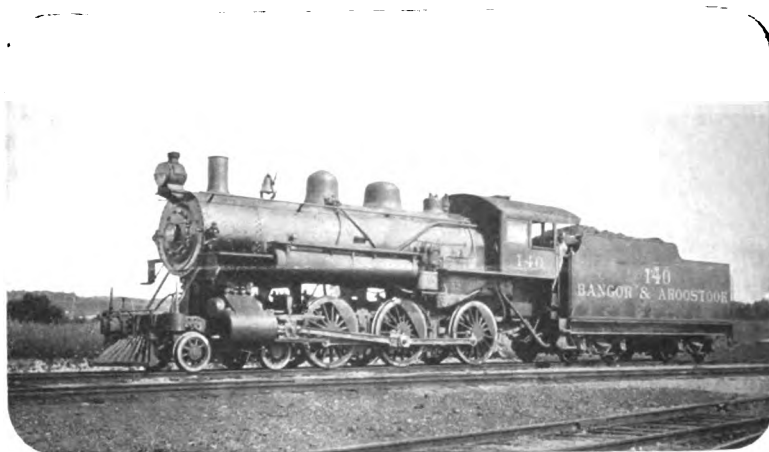
BANGOR & AROOSTOOK R. R.

The accompanying illustrations of steel bridges of the Bangor & Aroostook Railroad, were secured through the courtesy of Mr. Moses Burpee, Chief Engineer.

These bridges mark the line to that famous forest play-ground comprising over 15,000 square miles, including a lake area of nearly 2,000 square miles, a region known the world over as "The Wilds of Northern Maine."

Through the courtesy of Mr. George M. Houghton, Passenger Traffic Manager, Bangor & Aroostook R. R., we are able to display some interesting half-tones showing one of the modern locomotives which carry passengers to the wilds of northern Maine, a camp scene, and an interesting illustration of railroad construction.

Time has changed but little this wonderful wilderness which extends back from the waterways in vast unbroken stretches, a veritable paradise for the hunter, angler and lover of nature.



RUNS ON THE "WILDERNESS ROUTE"

Modern locomotive, suggestive of the splendid equipment maintained on the Bangor & Aroostook R. R.



AT WORK ON THE MEDFORD CUT-OFF

Railroad construction in northern Maine frequently breaks into the favorite haunts of moose and deer

The freight traffic statistics make an interesting analysis. During the railroad year ending June 30, 1908, the shipments included 318,315 tons of lumber; 189,836 tons of potatoes; 172,104 tons of logs, poles, and posts; 109,600 tons of paper; 96,853 tons of other product of forest; 20,417 tons grain and 17,852 tons stone, sand and other like articles.

The pulp mills are another important industry. The largest mills of this class are at Millinocket and East Millinocket. In the construction for these big structures Dixon's Silica-Graphite Paint was used for the protection of steel work.

The Aroostook potato crop has gained world-wide fame. It is expected that about 14,000,000 bushels will be sent to the outside world from the crop of 1908.

It is interesting to observe that out of a total average of approximately 4,400,000 acres in Aroostook County not much over 400,000 acres

have been cleared, while the aggregate unimproved area in this county and in Penobscot and Piscataquis Counties is over 7,000,000 acres. This points to grand opportunities in development.

In the management of the Bangor & Aroostook Railroad Company, all possible is done for the comfort and safety of the patrons of the road. In keeping with this plan the modern steel bridges, as shown in the illustrations on the following page, are well protected from corrosion with Dixon's Silica-Graphite Paint.

THE WORLD persists in giving the palm to some particular one of the many. Hence we speak of Stephenson as the father of the locomotive; Fulton of the steamboat; Morse of the telegraph; Bessemer of steel; Marconi of wireless telegraphy and Dixon of the plumbago or graphite crucibles.



BANGOR & AROOSTOOK R. R. BRIDGES

Painted With Dixon's Silica-Graphite Paint, Dark Red and Natural

LONG AGO Dixon's Silica-Graphite Paint won its own way from Maine to Frisco, and today we are filling large paint orders for thirty of the largest railroads in various parts of the country. In 1908 our export shipments of Dixon's Silica-Graphite Paint for use in the Philippines, Honolulu, India, South Africa, England, and all parts of the globe in fact, surpass all previous experiences. Now matter how severe

the climate or the conditions of service, Dixon's Silica-Graphite Paint withstands attacks of weather or water, sulphur fumes, smoke or extreme heat.

Prominent railroads have been for forty years using Dixon's Silica-Graphite Paint for bridge work. Their tests have been most exhaustive. These tests support our claim that it is impossible to produce a better protective paint.

MR. E. F. C. YOUNG

President and Friend

To know a man as so many of the Dixon men have known Mr. E. F. C. Young, the late President of the Joseph Dixon Crucible Company, is an everlasting joy and inspiration.

Mr. Young was a man of warm and kindly disposition, and it was our special privilege to meet him before and after his weighty duties of the day, as it was his custom to visit the Dixon office twice each day. His morning visit to the office was his first business of the day, and his late afternoon stop on his way home was his last business of the day. His many other duties, as he was connected with a number of other companies and corporations, were looked after between the Dixon visits.

His connection with the Dixon Company extended over a period of nearly thirty years, and in all that time, whether in the morning or the afternoon, he was ever the same.

He had a cheery good morning for all, whether officers of the company, superintendents, clerks or office boys, and his afternoon greeting was equally warm and pleasant, no matter how strenuous his day had been.

Whenever he had been instrumental in placing some girl or boy or man in the employ of the company, and this was very frequent, he never forgot the name of the person nor did he fail to inquire how that person was getting on, whether doing his or her work well or poorly. If well he was pleased; and if poorly he would say: "Don't retain them on my account, I don't want to burden the company with poor material."

He was a very far sighted man, and the foundation of the Dixon business and its present equipment for the future are evidence of that farsightedness. He was ever full of push and energy and inspired it in others. It was impossible to limit him to a small area of business. He could see possibilities when others could not, and so resourceful was he that nothing daunted him.

He was a good talker and knew how to present his knowledge in a thoroughly entertaining yet business-like way, and in this way he inspired confidence in others and was able to come in close touch with all the various departments of the company. With the single exception of the Florida cedar mills, he knew by visit and inspection every department of the Dixon plant, including the graphite mines and mills at Ticonderoga.

His sympathies were easily enlisted, and it was always his wish to be "counted in" for wedding gifts or for anything else, and the generous hand of the "Big Boss" gave a possibility to the event not otherwise attainable.

His attitude toward the personnel of the Dixon Company was that of a father and friend, rather than in a perfunctory or official way, as he had seen Dixon young men come up from office boys and bill clerks to positions of trust and responsibility, and in the factory he had seen them become heads of departments and superintendents. Very many changes take place in a quarter of a century and many possibilities there are to the young man willing to stick and learn and work. To Mr. Young all these changes were matters of his daily life, and his vital and helpful interest in the work, the sorrows and the pleasures of the members of the Dixon family never waned, and the love and the sorrow in the hearts of those left behind find no adequate expression in words.

CAMPAIGNING AGAINST THE WHITE PLAGUE

There is no doubt that we are all becoming more intelligently interested in retaining our general health and in the fighting of specific diseases, and there is no disease that demands more attention than consumption. Measures are being taken to awaken us all to what is demanded of each individual to help stamp out this plague.

At present there is in New York City what is called the International Tuberculosis Exhibition, which has been described as the "World's Fair for health and the greatest campaign against disease ever waged in the city." The exhibition includes demonstration of the methods used by fifteen foreign governments in combating tuberculosis, as well as American methods. The exhibition is brought on from Washington, where it was held in connection with the International Congress on Tuberculosis. Lectures are given both afternoon and evening by experts who have devoted attention to this particular disease. A fair idea of its ravages may be gathered from the statement authoritatively made, that 10,000 deaths occur in New York City alone from consumption.

Among other features a model dairy is operated. Allen Sangree, writing in the *New York Journal*, gives the following humorous description:

"Nearly every one stops first to look at the cows. Strange as it might seem to a country lad, dozens of city children come each day who never saw one of these beasts. They gape at the beast as though it were a shark-toothed wolf. If the Cornell student, who acts as chamber-maid of the Guernsey apartments, does his milking after school hours, the youngsters gather in such numbers that they have to call for police aid."

In this same article Mrs. Straus is quoted as condemning the practise of some concerns marketing milk who call their product pasteurized. What she describes as "commercially pasteurized" milk is not truly pasteurized in the accepted sense.

The subject is a somewhat gruesome one, but certainly it is time that we face facts as we find them. Dr. Woods Hutchinson is reported in the article previously referred to as stating that tuberculosis may be stamped out of New York City with the expenditure of about \$6,000,000. This, Dr. Hutchinson said, was only about one fourth of what is annually expended, but most of which is wasted.

Authorities seem to agree that one of the greatest reasons why the disease spreads is because of individual carelessness. Promiscuous expectoration is the great evil that the authorities are endeavoring to combat. We quote again from the *Journal* article:

"The sputum dries, turns to dust, is wafted here and there, and if the constitution is weakened the most splendid athlete is just as likely to get it as an infant. Do not neglect a cough or cold. Cut out alcohol."

FORTUNATE MOMENT

"Alas!" confessed the penitent man, "in a moment of weakness I stole a carload of brass fittings."

"In a moment of weakness?" exclaimed the Judge. "Goodness, man! what would you have taken if you had yielded in a moment when you felt strong?"—*Boston Globe*.

GRAPHITE

VOL. XI.

FEBRUARY, 1909.

No. 2.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regards to the different forms of Graphite and their respective uses.

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CASTOR OIL LUBRICATION

By L. H. SNYDER

Under the heading, "Some Prophecies of 1909 Racing Cars," by Rene M. Petard, in one of the recent numbers of *Motor Age*, there appeared a statement that "castor oil lubrication inaugurated this year will certainly generalize next season as favoring the enormous piston speed aimed at." Castor oil is a vegetable oil having both a high viscosity and specific gravity, and contains free fatty acids running from 0.7 per cent. to 14 per cent. Brannt says: "By long exposure to the air it becomes thick and forms a viscous mass, and even acquires poisonous qualities." We fail to see why a pure vegetable oil of high viscosity is recommended for the lubrication of internal combustion

motor cylinders, as authorities are all highly in favor of a light mineral oil. It is stated by Mr. Petard that if castor oil is used the piston rings must necessarily be very tight so that no oil will get by them into the combustion chambers, which will result in only the crank end of the cylinder being lubricated while the head end is left bare. In fact, it would be practically impossible to make rings but what some oil will get by them into the combustion chamber, and as pointed out by Mr. Petard that a heavy carbon deposit would be left behind; glycerine and fatty acids would also be formed by the decomposition of the oil at the high temperature found in the combustion chamber. Any temporary results which could possibly be obtained by castor oil would be accomplished by flake graphite, by putting the graphite into the crank-case mixed with oil in the proportions of a scant teaspoonful of graphite to a pint of oil, or by removing the spark plug and squirting a little graphite through the aperture by means of an insect gun. The function of flake graphite is to get right at the real cause of friction by eliminating the minute irregularities, microscopic, that exist in the metal surface, by filling in the low spots and forming over all a thin, tough, veneer-like coating, and if for any reason the oil supply should fail there is always the assurance that the parts may run for a long time without serious cutting or bound pistons. I advise trying this.

ARCTIC TEMPERATURES

Zero Weather is Regarded as Mild and Agreeable

According to eminent arctic explorers, physical sensations are relative, and the mere enumeration of so many degrees of heat or cold gives no idea of their effect upon the system.

One explorer states that he should have frozen at home in England in a temperature that he found very comfortable indeed in Lapland, with his solid diet of meat and butter and his garments of reindeer.

The following is a correct scale of the physical effect of cold, calculated for the latitude of 65 to 70 degrees north:

Fifteen degrees above zero—unpleasantly warm.

Zero—mild and agreeable.

Ten degrees below zero—pleasantly fresh and bracing.

Twenty degrees below zero—sharp, but not severely cold. One must keep one's fingers and toes in motion and rub one's nose occasionally.

Thirty degrees below zero—very cold. Particular care must be taken of the nose and extremities. Plenty of the fattest food must be eaten.

Forty degrees below zero—intensely cold. One must keep awake at all hazards, muffle up to the eyes and test the circulation frequently, that it may not stop somewhere before one knows it.

Fifty degrees below zero—a struggle for life.

—Chicago Record Herald.

LUBRICATING THE LEAVES OF SPRINGS

Dry spring leaves are not only responsible for many disagreeable squealy sounds which make a car sound old, but also produce poor riding qualities. When the individual spring leaves have become rusted and rough, the car should be jacked up and the springs scraped and lubricated. However, it is much better to prevent such a state of things by occasionally jacking up the car so the chassis will hang from the springs, thus opening and separating the leaves so that lubricating oil or grease can be inserted. One of the best lubricants and one which will last a long time is graphite mixed with a little grease. This can be inserted on a thin knife blade and will do away with much of the wheezing sounds so hard to locate.—*Cycle and Automobile Trade Journal*.

GRAPHITE weighing 5255 tons, valued at \$330,473, was imported into the United States in seven months last year.

—Power and The Engineer.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

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"LUBRICATING THE MOTOR"

The above is the title of an attractive little booklet that we have recently gotten out, dealing with the subject of lubrication for motor cars, motor boats, and motor cycles. The book is divided into chapters treating of the different parts of the motor, as for instance, cylinders, transmission, bearings, differentials, chains, etc. There is one chapter, headed "Something about Tires," which includes a table giving proper size of tires for certain loads. Also some general hints on care of tires. Another chapter, entitled "Overhauling the Car," gives some general points on the lubrication and care of the mechanism.

The opening chapter is entitled "Flake Graphite Lubrication," and contains the following:

The first fact we desire to emphasize is that flake graphite is not a competing product with oil and grease—oil and graphite, or grease and graphite, work best together. The places where you can use graphite alone are rare, partly because the machinery is not designed for this lubrication; but the lubri-

cating value of any oil or grease is always increased where it is possible to add a proper amount of flake graphite.

The object of oil or grease is to provide a film viscous enough to prevent contact of the metal surfaces, yet not so viscous as to have an excessive amount of friction within itself. This is the ideal condition, but it is seldom realized in practise.

Flake graphite performs its lubricating function on an entirely different principle. It attaches itself directly to the metal surfaces, fills in the microscopic depressions, becomes pinned upon the microscopic projections, and forms a smooth, tough, durable coating that positively prevents actual metallic contact. Thus the cause of friction, microscopic roughness, is directly reached.

Oil and grease are probably the best known reducers of friction, but they are too sensitive—their range of highest efficiency is extremely narrow. As conditions rise above or fall below those which are normal for any given oil or grease, its efficiency drops rapidly. Too high a temperature thins the lubricant and so weakens it that it cannot support its load; excessive heat disintegrates both oil and grease. If the temperature is too low the lubricant feeds too slowly, or exerts a retarding force because of its great viscosity. Speed and pressure are important factors—no one oil or grease can well adapt itself to wide demands in either particular.

How different is flake graphite; always the same under all conditions. Heat does not diminish its efficiency, nor does cold make it sluggish. Pressure does not squeeze it from the bearing, it is indifferent alike to high speed or low. Even acids and alkalies cannot affect it.

The motor car or motor cycle is exposed to wide variations in temperature, it must travel rough roads as well as smooth, it runs both slow and fast, its demands for power are from light on the level stretch to heavy on the steep grade.

And to meet this wide range of running conditions there is nothing equal to Dixon's Flake Graphite. A diminisher of friction and wear, a preventive of cutting and seizing, a guard against rust and corrosion.

To anyone interested in lubrication of motors of any kind, we would be glad to send our recent booklet on request.

THE GREAT HOPE

There is not one among us all
Who does not sigh for wealth and fame;
You may declare your wants are small,
You may profess that you would claim
No public honors if you might,
But in your heart you know you long
To stand forth in the dazzling light
And be applauded by the throng.

There is not one among us who
Has never wished that he some day
Might see awed little children strew
Sweet blossoms where he picked his way;
But, oh, how few there are who waste
Not all their years in hoping fate
May come some time in eager haste
To hand them greatness on a plate?

—S. E. KISER in *Chicago Herald Record*.

PREVENTING CORROSION OF STEAM MACHINERY

By W. H. WAKEMAN.

Chapter IX.

Having carefully reviewed the necessity for preventing corrosion on steam engines and pumps, it is now in order to give attention to the various kinds of boilers used for generating steam to operate the moving machinery.

It seems natural to begin a consideration of this part of such an important subject, by giving attention to the common return tubular boiler, because such a large proportion of steam generators now in use are properly classed directly with this type, or belong to a more or less modified kind of the same type.

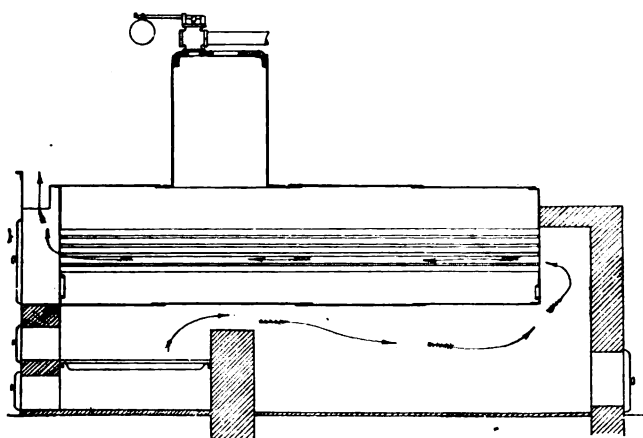


FIG 36

Fig. 36 illustrates the first boiler of this type that I had charge of; at that time, which is more than thirty years ago, there were large numbers of them in use, although but comparatively few are now made. It was fitted with a large dome, as that was considered an essential part of the boiler, without which dry steam could not be secured. The head in this dome was made of cast iron, with one hole cast in it large enough to admit the body of a man, and a nozzle was also provided for the main steam pipe. As this was the only way provided for entering the boiler above the tubes it was necessary to cut a large hole through the shell at this point, thus weakening it more than it would to cut a special man hole back of the dome, and provide it with a proper reinforcing ring. It was considered necessary to strengthen the plate below the dome.

The side walls of this setting were carried up above the top of the shell, and the space between these walls was filled with fine coal ashes, thus providing a cheap and effective non-conductor of heat, but if the shell of this or any other boiler that is set in this way begins to corrode, it is covered so effectually that it may not be discovered until it causes a disastrous explosion. If the upper part of this shell had been given two coats of Dixon's Silica-Graphite Paint and allowed to dry thoroughly before it was covered with ashes, it would have been much less liable to corrode in this unseen and never inspected place, than the bare iron was. The same reasoning applies to boilers set in any other way, especially if a brick arch is sprung over them as preferred by some engineers. If a boiler shell is painted with this scientifically prepared article,

and then covered with asbestos not less than two inches thick, it will retain heat, thus saving loss by radiation. It will also be protected from corrosion caused by collection of moisture when not in use, and if a joint begins to leak when under pressure, it will be brought to the engineer's notice by steam escaping through the covering.

Fig. 37 represents one of the tubular boilers in the plant that I have had charge of for about fifteen years. It has no dome and none is needed, because a carefully conducted test of the steam showed that it was perfectly dry, hence a dome could not improve it, as such an appendage is not a super-heater. Two nozzles are riveted to this shell. The front one is for the steam pipe, while the other carries the safety valve. The upper man hole is at the center where it can be utilized for entering the shell for the purpose of inspecting the braces, internal feed pipe, fusible plug, and all riveted joints. I never leave this important work to others, but attend it personally.

While making these inspections on a certain occasion, I discovered rust and corrosion collecting on the riveted joint which connects one of the nozzles to the shell. It appeared as if water had run down the pipe and caused the iron to rust. Mixing some of Dixon's Flake Graphite with cylinder oil to the consistency of thick paint, taking a small brush and while lying on my back on the upper row of tubes, painted the rusty spots thoroughly. Two boilers were thus treated, but the other three did not need it. After these boilers had been used for a greater portion of the working time during one year, I

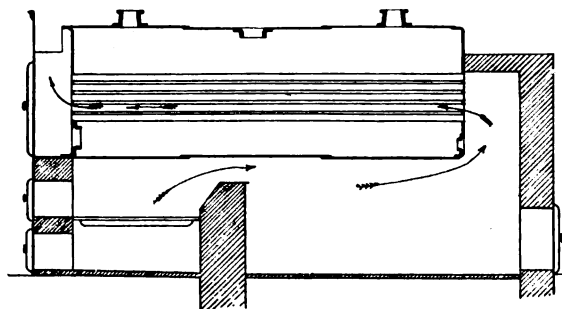


FIG 37

again inspected these places and found that the corrosion had been arrested. The graphite was there, still the same as when I applied it, and when we consider the heat to which it had been subjected, also the effect of steam rushing past this exposed part, it illustrates the tenacity of this article.

These boilers are set with flush fronts, or in other words the dry sheet does not project beyond the cast iron front. This is in pleasing contrast to the half arch setting in which the boiler projects into the room directly over the furnace door. This makes it impossible to burn that part of the dry sheet which projects beyond the cast iron front, but there is no need of burning any part of it with a flush front because the brick arch over the cast iron arch plate extends back far enough to prevent it. When this is worn out a new one should be provided without delay, and that will prevent trouble along this line. The principal reason for installing such an awkward and "unmechanical" device as the half arch front is the fact that the first cost is a few dollars less than the more symmetrical, durable, and convenient flush front.

(To be Continued.)



DIXON SHIPS THAT PASS IN THE LIGHT

GROUND HOG DAY

**It is Said That the Ground Hog may Appear at any Time,
Not Necessarily on Ground Hog's Day**

The following from the *Penny Press*, Middletown, Conn., is sent us by Mr. Edwin H. Crampton of Brooklyn, N. Y., who is one of the oldest stockholders of the Dixon Company, as well as a valued friend of the company and its officers.

Mr. Crampton advises us that he is well acquainted with Mr. Charles W. Hubbard, who wrote the article which follows, and that we may rely upon the truth of his statements.

Mr. Hubbard, after making a careful study of the animal, wrote the following:—

At about this time of the year much is remarked about the "ground hog" and its "shadow." I will relate my personal observations of one that I held in captivity for a year and a half. About the middle of June, 1887, I was presented with a young woodchuck, or ground hog. The animal was placed in a spacious enclosure on the premises, and became very tame with members of my family. It thrived and grew, waxing fat as the season advanced. During the first period of its captivity, we placed a receptacle of fresh water daily in the quarters where it was confined, but noticed after a while that the water remained untouched, so discontinued offering the water.

From that time, during the entire period of our possession of it no water was drunk, except the moisture obtained from green clover leaves, cabbage leaves and other green vegetables which we supplied it with. About the first of November he was in perfect physical condition, having gained flesh rapidly during the early fall. He was then removed to winter quarters in the cellar, and soon crept into his warm burrow of dry sand and leaves for his long winter sleep. Nothing more was heard or seen of him, until about the last of January, 1888, when we noticed a recent disturbance in his sleeping quarters.

On February 4th he emerged slowly from his warm nest,

and was a lean and lank object to behold. His eyes were closed as though he had only partly aroused from his long siesta. We offered him food, but he apparently took very little notice of surroundings, and after a short period crawled back again, and did not appear again until February 9. Then after a brief period he lapsed into a comatose state, remaining so until April 17, when he appeared and shook off his winter lethargy. In about two weeks his appetite became voracious again, and the spring "greens" were devoured rapidly.

If he had appeared on "Candlemas day" his shadow would have been visible, as the day was perfectly clear, but his vision being clouded, the silhouette would have been unnoticed by him. The remainder of the winter that followed is chronicled in history as the year of the blizzard, which occurred from the 11th to the 15th of March. February of that year, however, was no colder than the average, only three mornings of zero or below being recorded, and with very little snowfall.

—CHARLES W. HUBBARD.

LINCOLN

Abraham Lincoln, before he was elected to the Presidency, in response to an inquiry as to the financial standing of a neighbor, wrote a letter as follows:

"Yours of the 10th instant received. I am well acquainted with Mr. ———— and know his circumstances. First of all, he has a wife and baby; together they ought to be worth \$50,000 to any man. Secondly, he has an office in which there is a table worth \$1.50, and three chairs worth, say, \$1. Last of all, there is in one corner a large rat-hole that will bear looking into.

Respectfully yours,
A. LINCOLN."

DIXON's graphite publications will be sent free to anyone upon request.

BIRTHDAY CELEBRATIONS IN FEBRUARY

The month of February celebrates the birthday of two of America's great men. Perhaps opportunity had something to do with the fame these Americans achieved, nevertheless the fact remains that each rose to his opportunity and successfully finished the work he had in hand.

In looking over a copy of the life of Lincoln, we find the celebrated poem taken from *London Punch*. This paper, anticipating the practise of some of our modern "yellows" (though it is not our intention to draw any comparisons), went to the extreme lengths of vilification during the life of Lincoln, and then turned mourner with his death. The work referred to, Stoddard's "Abraham Lincoln," says:—

No satire was too pointed, no ridicule too coarse, no calumny too vile, no vituperation too profane, to be hurled at the man whom both American and English journalists did not hesitate to describe as a "gorilla" and as "the Illinois ape."

After the assassination, *Punch* published a poem, a portion of which we reproduce here. This in a measure atoned for its treatment of Lincoln during his life. However, it is for the truth and strength of the poem that we reproduce some of its verses rather than as an expression of *Punch's* contrition.

You lay a wreath on murdered Lincoln's bier,
You, who with mocking pencil went to trace,
Broad for the self-complacent British sneer,
His length of shambling limb, his furrowed face.

You, whose smart pen backed up the pencil's laugh,
Judging each step as though the way were plain,
Reckless, so it could point its paragraph
Of chief's perplexity, or people's pain:

Beside the corpse, that bears for winding sheet
The Stars and Stripes he lived to rear anew,
Between the mourners at his head and feet,
Say, scurrile jester, is there room for you?

Yes; he lived to shame me from my sneer,
To lame my pencil and confute my pen;
To make me own this hind of princes peer,
This rail-splitter, a true-born king of men.

My shallow judgment I had learned to rue,
Noting how to occasion's height he rose;
How his quaint wit made home-truth seem more true;
How, iron-like, his temper grew by blows.

How humble, yet how hopeful, he could be;
How, in good fortune and in ill, the same;
Not bitter in success, nor boastful he,
Thirsty for gold, nor feverish for fame.

The Old World and the New from sea to sea,
Utter one voice of sympathy and shame;
Sore heart, so stopped when it at last beat high;
Sad life, cut off just as triumph came!

DURING the last month we have received orders from companies interested in car heating and electric heating generally, for graphite resistance blocks. These blocks seem to be found very satisfactory for resistance and heating purposes.

THE GRAND CENTRAL PALACE AUTO SHOW

Of course, Dixon was there. The particular feature that has been included in the Dixon exhibit was again to be seen, the transmission case running in Dixon's No. 688 Graphite Grease. The transmission was secured through the courtesy of the Haynes Motor Car Company.

The quietly running gears attracted no little attention. The Dixon representatives were, in the language of the National Cash Register Company, "always in their place and ready for business."

In appearance the Dixon exhibit resembled many others. There is one of the Dixon features, however, that absolutely cannot be duplicated, and that is Dixon's Ticonderoga Flake Graphite, which forms a basis for all Dixon's lubricants. This graphite is generally considered to be the very best lubricating graphite the world produces, and the producing mines are owned and operated by the Dixon Company.

The exhibiton was in charge of Mr. L. H. Snyder of the Jersey City Office, who was assisted by Mr. H. W. Van Kuren of the New York Office and Mr. Marcus L. Rowe, who travels from the Home Office.

OMAHA ICE AND COLD STORAGE CO.

WHOLESALE AND RETAIL DEALERS IN DISTILLED WATER ICE.
423 So. 15th STREET. PHONE. DOUGLASS 445.

OMAHA, NEB., November 16, 1908.

Mr. Jos. R. Lehmer,

1218 Farnam Street, Omaha, Nebr.

DEAR SIR:—

We have been using Dixon's Graphite Axle Grease, purchased of you, for some seven months past and thought that you might wish to know what results we consider we have received from the use of same.

We would say that in all the time that we have had this axle grease in use, we have not had one burned out axle. Prior to that time we usually had several of them every week or ten days.

While the price of this grease is in excess of the cost of ordinary grease, the quantity necessary to use is fully one-half less, which reduces the cost to practically the same as the ordinary article.

We consider that we would be saving money even though nothing was gained in the quantity required, and that by preserving our axles we are insuring ourselves against accidents which almost always result in expensive delays.

Very truly,

OMAHA ICE & COLD STORAGE COMPANY.

LUBRICATING LOCKS

In cold weather many door locks work hard. It is difficult to apply oil and even if it were not so, graphite is far better. In place of any better form of graphite, Dixon's Powdered Stove Polish may be used. Or in lieu of that, some graphite may be scraped from the lead of a Dixon American Graphite Pencil. The graphite may be introduced into the lock through the key hole. It can be blown in through a quill tooth pick or the graphite may be put on a piece of paper and blown in. Try it and see how much better the lock will work.

READ ADVERTISEMENTS

Get the habit of reading advertisements. In the first place it is a good habit, and in the second place the habit may sometime put money in your pocket.

The National Tube Company, Pittsburg, Pa., recently wrote to some two thousand railroad purchasing and mechanical department officers asking, (1) whether or not they had noticed the advertisement of the National Tube Company in any publication; (2) the name of such publication or publications; (3) whether or not they were in the habit of reading the advertisements in any publication.

It is interesting to note that out of 2,000 letters sent out asking replies to direct questions (and we are taking it for granted that stamped envelopes were enclosed), only 535 made replies, as follows:

No. who had read the National Tube Company's ads...	230
No. who read ads. but who had not seen theirs.....	100
No. who read ads. when about to purchase.....	60
No. who always read ads.....	15
No. who never read ads.....	70
No. who seldom read ads.....	35
No. who dodged the question.....	25
No. who made no reply.....	1465
	2000

We all believe that advertising pays, and there is much to demonstrate that it does and how few seem to pay any attention to advertisements. The same may be said of letter writing. And yet again many may see and read advertisements without being fully conscious of it. The fact comes out later when they realize a want of the article advertised.

As a rule it would seem that what may be called "stock advertisements" are less liable to attract attention, and that it is necessary that an advertisement should have some particular feature. We are often more likely to notice a new face in a crowd than that of an old friend.

Publishers of high class technical and trade papers urge frequent changes of copy and they probably have found a reason for doing so.

At any rate we repeat, get the habit of reading advertisements, it will pay you in education if not always in money.

CHOSE DIXON PENCIL INSTEAD OF CIGAR

Being very close-fisted, Mason had never allowed himself the costly habit of smoking. He always felt himself a loser when any one treated to cigars. But on one occasion, when the party he was with entered a stationery and cigar store, he made up his mind to have his share of the treat.

"Won't you have a smoke this time?" asked the leader.

"No, thank you," replied Mason; "but if you don't mind, I believe I'll take a pencil."—*Harper's Weekly*.

THE WAY they dodge prohibition laws down South brings out the following from the *Boston Herald*:

Hush, little bar room,
Don't you cry;
You'll be a drug store
Bye and bye.

SPEED DANGERS

One of the auto journals published under the title of "Speed Dangers," a table showing a comparison of motor velocity, with the corresponding height from which a body must fall, under the law of gravitation, to attain the same velocity. In other words, one being thrown from a car under motion may see from what height he must fall to suffer the same impact of resistance.

TABLE.

Miles per hour.	Equivalent height of fall.
10	3.37 feet.
15	7.56 feet.
20	13.45 feet.
25	21. feet.
30	30.25 feet.
35	41.15 feet.
40	53.78 feet.
45	68.06 feet.
50	81.67 feet.
55	101.67 feet.
60	121. feet.
65	142. feet.
70	157.3 feet.
75	189. feet.
80	215. feet.
85	243. feet.
90	272. feet.
95	299. feet.
100	325. feet.

LUBRICATION OF ICE MAKING MACHINERY

A well-known instructor in mechanical engineering and recognized authority on refrigeration, says that the question of the proper lubrication of the steam end of the ice making machine is a very important one, and that it is a hard matter to separate all the oil from the condensed steam which has to be used for making the ice, and that because of this the loss runs from 10% to 15%.

Considerable thought and attention has been given to the question of graphite lubrication, and at the last meeting of the American Society of Refrigerating Engineers, it was suggested that they look into the matter of graphite lubrication. Considerable has been done in the matter of graphite lubrication, and some very satisfactory reports have been received by the Dixon Company.

IF WE take notice of the sky we find that some of the stars are red and some are blue, yet others violet and still others green in color. Of course, all of the stars (if we bar the planets of our own system) are burning suns, and the hues they wear depend upon their temperature. The hottest stars are blue. Thus Vega, in the constellation Lyra, is a blue sun, hundreds of times as large as our own solar orb. We are journeying in its direction at the rate of millions of miles a day, and at some future time it may gobble us all up. For, after all, humiliating though the confession be, our sun is only a very small star—of the sixth magnitude or thereabout, and of an importance in the universe so slight as to be scarcely within the pale of respectability.—*Reader Magazine*.

HOWARD'S CALIFORNIA CALENDAR FOR THIRTY CENTURIES

We find the following calendar in a book, published 25 years ago, which is said to be good from the year one to the year 3000, inclusive. A calendar as broad as this should suit the most particular reader of GRAPHITE. RULE.—Cast all the sevens out of the last two figures of the year; add the remainder to the quotient* of the last two figures of the year, divided by four, take this sum with the day of the month, the figure for the month, and the figure for the century, dropping all the sevens as they occur. One remainder will be the first day of the week, Sunday; 2, the second, etc.; 0, last day of the week, Saturday.

TABLE OF FIGURES FOR THE MONTHS

1, Sept. & Dec. 3, Jan. & Oct. 5, August 0 June.
2, April & July 4, May 6, Feb. March. Nov.

NOTE:—In leap year January is 2 and February is 5.

TABLE OF FIGURES FOR THE CENTURIES*

1, Is the figure for centuries	.....2, 9 and 16.
2, " " " " "	1, 8, 15, 18, 22, 26, 30.
3, " " " " "	.....7, 14.
4, " " " " "	...6, 13, 17, 21, 25, 29.
5, " " " " "	.....5, 12, 20, 24, 28.
6, " " " " "	.....4, 11.
0, " " " " "	.....3, 10, 19, 23, 27.

EXAMPLE:—What day of the week will be the Fourth of July 1909? Answer, Sunday.

Process—Last two figures of the year, $09-7=2$ quotient of $09 \div 4=2+2=4$.

Day of month $4+4=8-7=1$.

Figure for month $2+1=3$.

Figure for century $5+3=8-7=1$.

After casting out the sevens the remainder is 1; hence the Fourth of July, 1909 will be on the first day of the week, Sunday.

It would seem as though the process is quite as accurate and more simple as follows:

Last two figures of the year $09-7=2$.

" " " " " " $09 \div 4=2$.

Day of month..... 4

Figure for month..... 2

" " century..... 5

15

$15 \div 7=2$ and 1 remainder—Sunday.

*Disregard the fraction, if any, in the quotient.

THE SURGEONS who operated on the leg of E. R. Thomas concluded that his mental condition, shown by his impatience at the slow manner in which he was regaining the use of his leg, was retarding the healing process, and so sent him south for a trip.

It occurs to the man on the fence that the mental healers will be quick to take advantage of this opening, for if a mental condition can retard the healing process, why should not a favorable mental condition aid?

DIAMONDS AND GRAPHITE

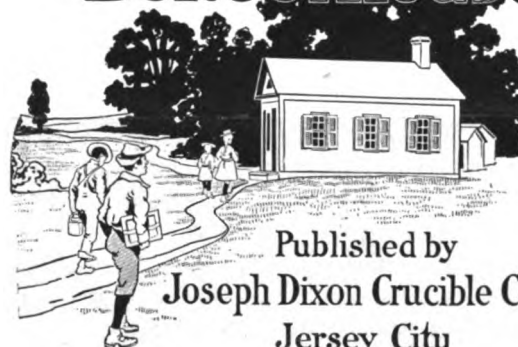
Showing That Beauty is Indeed But Skin Deep

The properties of the diamond are not of any great importance, with the exception of its hardness, which is taken advantage of to cut or scratch hard substances—glass, hard rocks, etc. Its market price is out of all proportion to its intrinsic value, and is largely due to the brilliancy with which it refracts and reflects light, thus giving it a high value for ornamental purposes.

Graphite is far more valuable to man. Its most important properties are its unalterability at a high temperature and its power of conducting heat and electricity. These properties lead to its use for mixing with clay for the manufacturing of crucibles to stand a high temperature, and for making the terminals between which the electric arc passes in electric lighting. It is also used for lubricating purposes, for protecting ironwork from the action of damp air, and in the manufacturing of pencils; consequently, its many uses makes graphite of more value to mankind than the diamond.

—*American Journal of Steam and Electrical Engineering.*

The Little Red School House



GRANT WRIGHT DEL. N.Y.

N. J.

The public schools of this country are putting before the pupils more and more the examples of great and good men and women. The stories of the glorious deeds of noble men are not only the most interesting but one of the best methods of instructing the young.

The Dixon Company has just issued a 32 page booklet similar in style to their "Pencil Geography," but this one deals with Biography. It gives about sixty brief accounts of a few of the men and women who have been identified with the early history of this country, and who attended what was then known as "The Little Red School House."

Such names as Israel Putnam, Benjamin Franklin, Horace Mann, Elias Howe, Ethan Allen, Patrick Henry, Samuel Adams, David G. Farragut, Paul Jones, Eli Whitney, Nathan Hale and Abraham Lincoln.

It contains information that will be valued not only by the young, but by their elders as well. Copies sent free to all that desire them.

PLUMBAGO is one of the handiest of articles for rebushing a leaky pump.—*Cycle and Automobile Trade Journal.*



HARRY DAILEY

Secretary of the Joseph Dixon Crucible Company

Mr. Harry Dailey was born in Chester, Morris County, New Jersey, Tuesday, October 30th, 1860. We omit the horoscope cast at that time, but it may be inferred from what follows.

His school days were spent at the District School at Peapack, N. J., where he became so well versed in the four R's, reading, 'riting, 'rithmetic and 'rastling, that at the age of fourteen he considered himself competent to enter upon a business life, and he at once began it in the notion and fancy goods store of Joseph W. Thompson in Morristown, New Jersey, working the first year for his board and the succeeding two years for a moderate salary, after which time he changed to the store of Knox & Fayman, Morristown, dealers in dry goods and carpets.

As junior clerk he was required to reach the store in advance of the other clerks, sweep up and prepare for the work of the day. It made a good foundation to build on.

The firm did a large business among the farmers who often drove ten or fifteen miles to shop in Morristown, and who at times brought their entire families to assist in the selection of purchases.

Mr. Dailey sold them calicos, dress goods and often their parlor carpets, and in the endeavor to please wives, sisters, cousins and aunts in their more important spendings, he soon acquired a general knowledge of all branches of the business and a patience and keen insight into the natures of people which made him a valuable clerk, and stood him in good stead in his later successes.

After about two years' service with this firm he resigned to associate himself with his uncle, Andrew Bay of Morristown, as a partner in the clothing business. This business venture was abandoned before being consummated, and through the friendship of his former employer, Mr. Knox, and the influence of Mr. A. J. C. Foye of New York, he secured a position with the Dixon Company as bill clerk. This was on March 29th, 1880; from this position he was soon given charge of the shipping, and in September, 1887, was promoted to the head of the Purchasing Department, and a month later took to himself a wife, as all able young men should.

He married Charlotte, the daughter of Wm. R. Hegeman,

of Brooklyn, N. Y., and niece of John R. Hegeman, President of the Metropolitan Life Insurance Company of New York.

Mr. Dailey held the position of head of the Purchasing Department until May, 1907, when he was elected Secretary and Director of the Dixon Company.

Mr. Dailey has been an able and valuable man to the Dixon Company, full of energy and ambition, and one who has been up with his work at all times, and yet who has found time to take an active part in politics, church work and other outside duties. He has been a good example of the truth of the saying that "it is only a busy man that has time to do things."

SHARP SHOD OR SLIPSHOD?

It would seem that ordinary human kindness should be sufficient incentive to keeping horses properly shod when the going is slippery, as it frequently is at this time of the year. But we may omit all sentiment, and pure selfishness will furnish the same incentive. The only good horse is the live horse, and though broken legs with the resulting necessity of shooting the horse may not result, severe sprains or strains can easily follow from the horse's slipping on the icy streets. This means reduced efficiency as far as concerns "horse power," even though it be still possible to keep him in the harness.

We give the following extracts from the Dixon booklet entitled "The Horse":

Keep the horse shod with sharp calks when the going is slippery, or a broken leg, or at least a sprain, will very likely result. Many horse owners have their horses shod with rubber pads in winter. They cost more, but last longer. They are the only shoes that prevent slipping on asphalt. With some horses these do not work well, while with others they prevent lameness.

Protect your horse against dampness and cold. Rubber blankets offer the best protection against rain and snow—and the best blankets are the most economical.

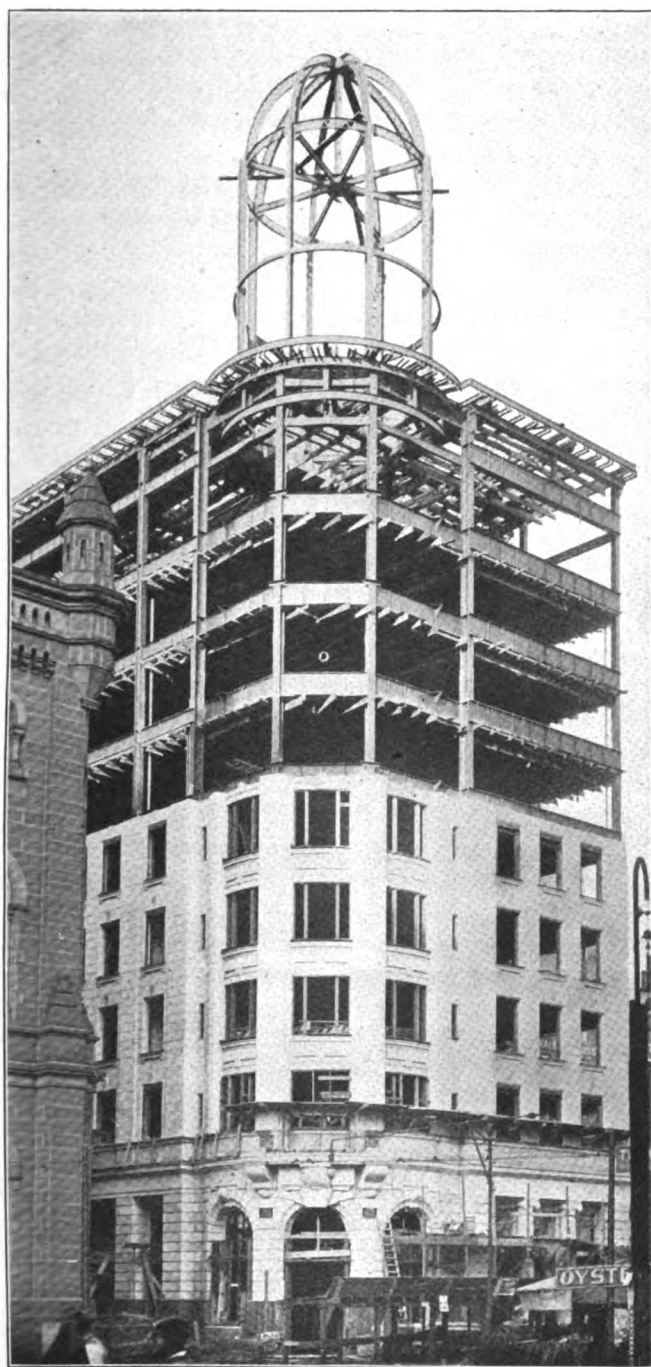
Never let your horse stand in a cold wind, and do not tie him facing the wind or rain. Old horses should be especially favored and well blanketed. Do not demand hard service of them.

Even though the horse is properly shod, it is well to bear in mind that he cannot pull heavy loads when the streets are covered with ice and snow as well as he can when the streets are clear. As before stated, a little humanity should temper our treatment of such a faithful beast as the horse, but when this is lacking it will be found good business policy to treat your horses right, to take proper care of them, to keep them happy and contented.

We all know how grouchy is the genus man when cold or hungry or uncomfortable in any way, and how much better he performs his work under agreeable and comfortable conditions. It is not at all unreasonable to suppose that the same holds true of the lower brute.

Of the "has beens" there are many,
Of the "ne'er was" more by far,
The "going to be" are legion,
But how few of them that "are."

—F. W. GRAY.



"THE EVENING BULLETIN," PHILADELPHIA

Frank C. Roberts Company, Architects and Engineers
 Doyle & Doak, General Constructors
 Jones & Laughlin Steel Company, Steel Contractors
 Snyder & Company, Iron Erectors

IN PHILADELPHIA NEARLY EVERYBODY READS THE BULLETIN

So runs the slogan of the *Evening Bulletin* of Philadelphia. However, this is not the phase of the subject that we are to discuss, but we believe many of our readers will be interested in knowing the new and modern Bulletin Building. Our Philadelphia Office sends us the following description:

During the present year the city of Philadelphia has seen erected the new imposing nine story granite building for *The Evening Bulletin*, at the Northeast corner City Hall Square, a commanding location indeed.

The general architecture of the building is an adaption from the style of the modern French Renaissance.

The dome which crowns the tower of the Bulletin Building, is decorated in glazed green and cream terra-cotta panels adopted from an antique Grolier bookbinding of an interlaced effect.

At the top of the tower, just underneath the cornice, are three heads, portraits of Gutenberg, Caxton and Aldus, the fathers of printing in Germany, England and Italy.

Over the main entrance to the Bulletin Building, a winged globe, showing the entire western hemisphere, has for a background a stone reproduction of a modern newspaper printing press, flanked on either side by a scroll and a pen, and underneath is the head of Mercury; all symbolic of the activity of a metropolitan newspaper.

The publication office of this building is finished with panels of rich figured natural Circassian walnut and wainscotted with highly polished Negalla marble imported from Africa. A large column of the latter material in the centre of this room is surmounted by an English Gothic capital, from which are suspended bronze chandeliers, each bearing a Pompeian lamp. The ceiling is bordered with recessed incandescent lamps. The entire effect is beautiful, yet dignified in its treatment.

The Bulletin Building is of the most approved type of steel and concrete construction, and as nearly fire-proof as it is possible to make such a building today.

The structural steel received two coats of that excellent preservative, Dixon's Silica-Graphite Paint, Natural and Green colors.

A WOMAN'S CHANCE OF MARRYING

Many women say that they would not marry the best man living. Some women say they would marry, only they have slipped up on their ideal or the right one hasn't come along. Still others say "they prefer a career" or a good paying position that will enable them to live a comfortable and independent "bachelor girl" life. Others would marry in a minute, "sight unseen," only no one seems to want them.

As a matter of fact, all women have a chance to marry, whether they know it or not. It may be remote or it may be close by. Representing her entire chance at one hundred, at certain points of her progress in time, it is said to be in the following ratio:

Between the ages of 15 and 20 years.....	14½ per cent.
" " " " 20 " 25 "	52 "
" " " " 25 " 30 "	18 "
" " " " 30 " 35 "	15½ "
" " " " 35 " 40 "	3¼ "
" " " " 40 " 45 "	2½ "
" " " " 45 " 50 "	¾ of 1 "
" " " " 50 " 56 "	¼ of 1 "

We do not know who the authority is for the above table, but we do know that New Jersey girls are always in good demand without regard to age. New Jersey is a favored state for products of all kinds.

A WRITER has said that we all have eyes to see apples fall to the ground, but it takes an Isaac Newton to see the ground fall to the apple.



MORE CRUCIBLE RECORDS

The illustration occurring on this page shows some Dixon's No. 60 Crucibles shipped to one of our new England customers. At the time the picture was taken from which the illustration was made, these crucibles had run forty-two heats, seven heats a day for six days.

Heats were then continued until each crucible finally gave out; they ran from forty-five to sixty-seven, the average being 55.8 heats, which we believe we have cause to consider creditable. The metal was yellow brass.

FIRST ANTHRACITE COAL

WHEN THE first two tons of anthracite coal were brought into Philadelphia, in 1803, the people of that city, so the records state, "tried to burn the stuff; but, at length digusted, they broke it up and made a walk of it." Fourteen years later Colonel George Shoemaker sold eight or ten wagon loads of it in the same city, but warrants were soon issued for his arrest for taking money under false pretenses.

—*Exchange.*

The cause of all the trouble was ignorance. The people did not understand the nature or the requirements of coal for successful burning. To a large extent it has been the same with lubricating graphite. It has been necessary to teach engineers and others the nature of graphite, the different kinds of graphite, the proper conditions for its use, the proper quantity to use and the best methods of use. All this has required time and patience.

In the early days of coal burning very likely but few could distinguish good coal from poor coal—many cannot tell the difference even now. So it is not surprising that the nature, as well as the great value of flake graphite as a lubricant is so little known, comparatively speaking.

The Joseph Dixon Crucible Company were the pioneers in the graphite field and are today the largest and most successful concern in that line.

FURTHER PRODIGALITY

The Chemical Engineer tells us that in view of the universal extravagance and waste of priceless resources, and the astounding loss now in progress, it would seem that man is scarcely worthy of his claim to be an animal endowed with reason.

This reckless waste and utter disregard of future consequences is well nigh incomprehensible. It requires the most rigid enforcement of the state law to prevent man from polluting his water supplies until they become a danger and menace to health. With no restraint it appears that our timber and wood supplies will practically disappear within two decades. It is merely a question of a limited time when the present abundant supplies of oil and coal will be only memories.

Man has even made an attack on our atmosphere. Stimulated by the estimated exhaustion of the supply of nitrogen for fertilizer in the Chile deposits of niter within the next thirty years, many vigorous attempts are now in progress, and it is said with commercial success in Norway, to convert atmospheric nitrogen into a fertilizing form. With the world drawing on the atmosphere for oxygen and nitrogen for manufacturing purposes, a limit may be reached when man will be concerned as to where he will get his breath.

DIXON'S TICONDEROGA FLAKE GRAPHITE PREVENTS FAILURE

Not long ago an assistant manager of a company which specializes in the manufacture of machine tools, informed one of the Dixon representatives that Dixon's Flake Graphite No. 1 had made a die that they were experimenting with a success, and without graphite it had been a bad failure. The manager had spent considerable time in the development of this machine (and it was up to him to make good); the part where he least looked for trouble, promised to ruin the success of its operation.

The machine is for making rivets, and these would stick in the die and require a tremendous force to drive them out. This was enough to break a two inch steel rod or drive the plunger into the hot metal $\frac{7}{8}$ of an inch.

When Dixon's Flake Graphite was fed upon the die, rivets 3 inches long were turned out without any fin and they were so smooth that seven could be stacked up in a pile without toppling over.

The graphite and oil are fed by means of an ordinary force feed pump without an agitator. Compressed air is turned into the bottom of the pump to keep the graphite from settling.

NOVEL USES OF ICE

A government expert has devised a novel method of keeping a car or compartment comparatively warm in zero weather; not by fire, but by the utilization of ice. A well-insulated car is fitted at each end with four galvanized iron cylinders reaching from the floor to the top of the car. In summer these cylinders are filled with ice and salt to keep the car cool. In winter they are filled with ice to keep the contents of the car from freezing.

Ice is nominally at a temperature of thirty-two degrees Fahrenheit, and is a substance that changes temperature reluctantly, being a poor conductor of heat or cold. Consequently when zero weather prevails outside, the cylinders of relatively warm ice prevent the escape of heat; in other words, they maintain the temperature within the car.

Another method whereby ice is employed for protection against cold consists in throwing a plentiful stream of water on the car when the temperature is near zero point, which freezes at once and forms a complete coat over the car. The action of this ice is the same as in the case of the cylinders filled with ice. A similar plan is frequently adopted in the transportation of bananas, a fruit particularly susceptible to cold.—*National Provisioner*.

THE PRAYER OF MAN ALIVE

By RICHARD WIGHTMAN

THE DAY THAT MIGHT HAVE BEEN BETTER

Father, I am not very sure that this has been a good day. It dawned like any other day and now is dying as other days have died, but my memory of the kind of man I was during some of its hours is not altogether satisfying. I do not wish to repudiate this day, nor to disown it, nor to escape the consequences of what I have said or done. Rather would I have it keep its place in the Calendar of Experience, with every thought and motive brought to harvest. If forgiveness carries with it evasion of the consequences of error, I do not ask to be forgiven. Instead, I would trust my unfinished self fearlessly to the justice of that law which provides that every Cause shall beget an Effect in its own image. Let me meet again, in their proper time and form, the children of this day's deeds. And now, at night, as I sit in the stillness and watch the blue and yellow flames above the hearth, may I have ability for impartial retrospection, and intelligent choice of spiritual qualities, that the morrow, if there be one, may hold more of patient industry and kindly feeling.—*The American Magazine*.

GRAPHITE brushes are suitable for general use on grooved commutators and on motors of 100 H. P. and over. The graphite brush inherently has a large lubrication nature, and has the power of carrying a large current per square inch. The lubricating quality of the graphite brush serves to reduce or obviate chattering and constant breakage of brushes. The abrasive effect of graphite brushes is generally low, and it does not have the power to polish the commutator and wear away the side mica and therefore should be used only on commutators with grooved side mica. The composition is mainly graphite.—*Electrical World*.

Productions of the Dixon Crucible Co.

Dixon's Black-lead Crucibles and Retorts, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

Dixon's Brazing Crucibles, made in several shapes for dip-brazing.

Dixon's Graphite Boxes and Covers, for baking carbons and filaments for electric lighting.

Dixon's Fine Office and Drawing Pencils, unequalled for smooth, tough leads and uniformity of grading.

Dixon's Colored Crayons, in wood or solid. For schools, railroads, editors or factory.

Dixon's Lumber Leads, black or colors; for green or dry lumber.

Dixon's Metal Workers' Crayons.

Dixon's Felt Erasive Rubber, for erasing pencil marks, type-writer work or ink.

Dixon's Carburet of Iron Stove Polish, the old reliable; in cake.

Dixon's Pure Flake Lubricating Graphite, a solid lubricant for all frictional surfaces.

Dixon's Special Graphite No. 635, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

Dixon's Electrotyping Graphite, used by the majority of practical electrotypers of this country.

Dixon's Hatter's Lead, for coloring hat bodies.

Dixon's Plumbago for Shot Polishing.

Dixon's Plumbago for Powder Glazing.

Dixon's Plumbago Foundry Facings.

Dixon's Yacht Plumbago, for lubricating and smoothing bottoms of yachts.

Dixon's Graphite Waterproof Grease, for gears, wire ropes, hoisting chains and general machinery.

Dixon's Graphite Axle Grease, for trucks, wagons, carriages.

Dixon's Graphited Wood Grease, for use on trolley car gears which are enclosed in a gear case.

Dixon's Graphited Oil, for use in all places where the use of a gear grease is impracticable.

Dixon's Graphite Cup Greases, for use in cups or open bearings, on spindles, shafting, etc.

Dixon's Oiled Graphite,

Dixon's Lubricating Compound No. 688, for enclosed gears of electric automobiles.

Dixon's Silica-Graphite Paint, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

Dixon's Graphite Pipe-Joint Compound, for steam, gas and water piping, smearing gaskets and flanges.

Dixon's Automobile and Bicycle Lubricants.

Dixon's Graphitoleo, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

Dixon's Commutator Graphite, will glaze commutator with the finish so much desired by electrical engineers.

Dixon's Graphite for Type Setting Machines.

Dixon's Graphite for Talking Machines.

Dixon's Motor Chain Compound, for transmission chains.

Dixon's Crucible Clay and Graphite Mixture, for lining and repairing fire boxes.

Dixon's Stove Cement, for repairing stove or range lining.

Dixon's Traction Belt Dressing, for leather belts.

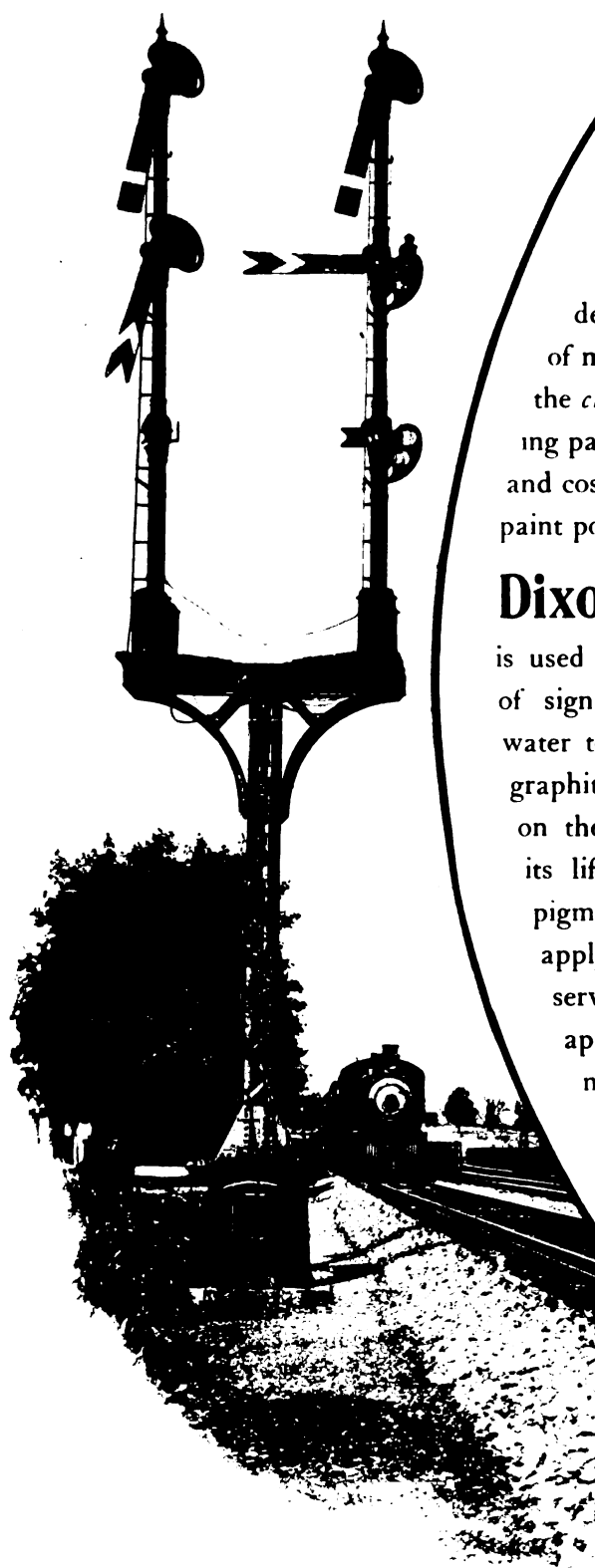
Dixon's Solid Belt Dressing, convenient for those who prefer a solid dressing.

Dixon's Graphite Resistance Rods, from one-eighth to one inch diameter; any resistance required.

Dixon's Graphite Brushes, for motors, dynamos and generators.

Dixon's Graphite Products for Electricians.

Special circulars with detailed information sent on request.



Signal Service

The exposed parts of the signal system demand *some* protection. And the experience of many roads has been that the *best* protection is the *cheapest* protection. The cost of labor in applying paint is practically the same regardless of the quality and cost of the paint itself. That's why it pays to use a paint possessing proper "staying" qualities, and that's why

Dixon's Silica-Graphite Paint

is used to such advantage for the iron and steel work of signals, signal pipes, signal towers, stand pipes, and water towers. The pigment for Dixon's paint is silica-graphite. Unlike metallic pigments, it does not act on the vehicle chemically and thus help to destroy its life. Because of the lubricating nature of the pigment, Dixon's Silica-Graphite Paint is easy to apply. For the same reason this paint gives good service on the movable parts of the signal apparatus. Time records on many roads in many climates—let us send you our 1909 edition of "Colors and Specifications."

JOSEPH DIXON CRUCIBLE CO.

JERSEY CITY, N. J.

U. S. A.

GRAPHITE

VOL. XI.

MARCH, 1909.

No. 3.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

COPYRIGHT, 1909, BY JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

A DOVETAILING OF INTEREST

A conflict between the United States and Canada is slowly becoming a remote possibility. High tariffs on both sides may limit trading somewhat, but the high tariffs do not apply to everything. Tariffs are always limited in their application—a fact too often overlooked by free-trade enthusiasts. In 1900, the United States sent us goods to the value of one hundred and three million dollars—a very tidy year's sales. Every year these sales grow. In 1907 they amounted to one hundred and eighty-six million—they nearly doubled in seven years. In fact, the United States sold us more goods last year than she sold to Asia, Africa and Oceania combined.

Nor is this the only source of profit which the United States has in Canada.

Much is heard about the great increase in Canadian manufacturing, but it is seldom pointed out that a large portion of the profit from this branch of Canadian effort goes to United States investors. In 1901, it was estimated that four hundred and forty-seven million dollars of United States capital had been invested in manufacturing establishments in the Dominion. Now we are told that this has nearly doubled, and already stands at \$846,000,000. Five per cent. on that would be \$40,000,000 a year—a very tidy revenue.

So long as the United States can sell us a couple of hundred million dollars' worth of goods a year and in addition draw forty or fifty million dollars a year from this manufacturing field—to say nothing of her other investments in real estate and pulp limits—she will not be anxious to destroy us. A year's war against us would cause her a loss of more than half a billion dollars on this side of the line, in addition to the cost and the loss on her own side of the boundary.

—*Canadian Courier Magazine.*

THE chain should be cleaned often, depending upon the weather and the amount of use, of course. Never oil the links when the chain is on the car. If the chain is very dirty, give it a bath in kerosene oil, working all the dirt and grit out, and then use graphite. This does its work in a dry state and if well worked into the links little or no dust can get inside the rollers.

—*The Power Wagon.*

OUR GERMAN FRIENDS ON GRAPHITE PAINT

The *Brewer's Journal* printed not long ago a little item, headed "Paints Protecting Iron," from a German contemporary, which we reproduce:

Although red lead is the oldest and most effective means of protecting iron from rust, it is no longer favorably considered because it dangerously affects the health of those coming into contact with it. Some of the substitutes now replacing red lead have been found to be quite satisfactory. Among them is a paint composed of linseed oil and graphite, which, if applied on surfaces free from corrosion, is just as good as red lead. If the parts to be protected are not too large they may be successfully cleaned from rust and dirt by immersion in diluted sulphuric acid and then brushed off with a wire brush. Large pieces of structural iron or parts of heavy machinery may be painted with the diluted acid and then brushed off until its surface is a metallic pure light gray. To completely remove the acid the surface should be rinsed with water or lime-water and then thoroughly dried. Thereupon the linseed graphite paint is applied with a brush. Two or three coats should be given.—*Leipziger Färber-und Zeugdrucker-Ztg.*

DIXON'S SALESMEN ON THE JOB

It is gratifying and often surprising to note how many times the Dixon salesmen succeed in getting orders from people who are just starting in business.

Our Credit Department reports that in the large majority of new houses, the orders are received before the commercial agencies have succeeded in getting their reports placed on file and when the inquiry for a report is received from the Dixon office, the agency is compelled to report "no information on file, will send for report." When this report has been received it shows the concern starting out under auspicious conditions and that the Dixon salesman has been on the job within a very short time after the organization of the business.

WE LEARN from the *Mineral Resources of the United States*, that "a graphitic rock mined in Georgia is ground and put into phosphates used for fertilizer, as a black color is demanded by consumers, on the supposition that it means better quality. In Michigan graphitic rock is ground for use in paint. Amorphous graphite may be more closely related to anthracite coal than to crystalline graphite, as an example is found in the Rhode Island deposit, formerly known as anthracite coal, but which now furnishes commercial graphite."

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

OFFICERS:

President—GEORGE T. SMITH
Vice Pres.—WILLIAM H. CORBIN
Treasurer—GEORGE E. LONG
Secretary—HARRY DAILEY

DIRECTORS:

GEORGE T. SMITH	WILLIAM H. CORBIN
GEORGE E. LONG	EDWARD L. YOUNG
WILLIAM MURRAY	HARRY DAILEY
WILLIAM G. BUMSTED	

SALESROOMS AND OFFICES:

NEW YORK SALESROOM, 68 Reade Street.
PHILADELPHIA SALESROOM, 1020 Arch Street.
SAN FRANCISCO SALESROOM, 145 Second Street.
CHICAGO OFFICE, 1324 Monadnock Block.
BOSTON OFFICE, 636 John Hancock Building.
PITTSBURG OFFICE, 2213 Farmers' Bank Building.
ST. LOUIS OFFICE, 501 Victoria Building.
WASHINGTON, D. C., OFFICE, 814 14th Street, N.W.
BALTIMORE OFFICE, 1005 Union Trust Building.

A SCIENTIFIC ENIGMA

Carbon, represented as it is in the form of graphite, the diamond, charcoal, coal, lampblack, etc., has about it an impenetrable mystery. According to Professor Larkin of California, it is archaic and eternal, omnipresent and primordial. The spectroscope, that marvel of all ages, shows carbon glowing in the sun at white heat, and we know that it burns—that is, unites with oxygen in our bodies—thus keeping us alive by the evolution of heat. Carbon is the concentrated life of nature.

You can get equal quantities of carbon for one cent or one million dollars. To strike up a bargain it would seem that the investment of one cent would be the wisest. You can obtain a piece of carbon in the form of graphite for one cent. You will find it is as black as the ace of spades is said to be. It is not only jet black, but is smooth, soft and friable.

If you want the same weight of pure white carbon, it may be had in the shape of a diamond for a million or two. In this

shape the carbon is the hardest body known, and the most difficult to melt, yet electricity is able even to make diamonds liquid.

Therefore, carbon is found pure in the diamond, nearly or quite pure in graphite, which is the material in our lead pencils, and for some inscrutable reason it is called "lead." Carbon is also found in charcoal, coal, coke and petroleum.

All animals and plants contain carbon in their tissues; it is in the air, in the earth and is found in comets.

The carbon in the comet is not free, but is joined chemically to hydrogen in a body called a hydrocarbon. The comet comes to us from the appalling depths of space on a visit to the solar system. It comes to us and then goes away, frequently never to return, but the question is where did it get its carbon, for the spectrum of a comet shows light like that emitted by common gas, which is known to be carbon and hydrogen.

Hydrogen is always present in the most primitive forms of nebulae in space, and in the latest sun. Hydrogen is ever present near the "beginning" of cosmic evolution, and has a strong affinity for carbon, with which it combines in many proportions.

Meteors, also from the depths of space, bring carbon to the earth and sun. Those that reach the earth have in several instances contained carbon in the shape of diamonds, not very popular, however, because black, but good enough to cut glass with.

Of all conceptions that can fill the mind with sublime thoughts, the white hot liquid carbon envelop of the sun is the most impressive.

DIXON'S No. 635 ON LINOTYPES

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

GENTLEMEN:—

In answer to your inquiry I will say that I have used the lubricating graphite manufactured by the Joseph Dixon Crucible Company, and am more than pleased with it, especially with the No. 635, which I use for polishing linotype spacebands. I use the flake graphite ground in oil on the cams and other heavy moving parts of the machine and find that the machine works smoother and more quiet. Large screws and also small ones should be rubbed up with graphite and oil before being driven home, as also should belts and pipe-joints; then there would be no need to mutilate the head in renewing them. Long after the oil is gone, the graphite will remain to lubricate the threads so that they may be loosened with ease.

I find the Dixon products to be satisfactory in every way.

Yours truly,

E. T. R. _____

Mgr. R. _____ Brothers.

A BROOKLYN man tried to commit suicide and failed. Four ounces of brain were removed and it was thought for a time that he would recover. Later, however, there was a change and he died. After the operation the man learned to play chess, a game he was never able to master before he shot himself.

PREVENTING CORROSION OF STEAM MACHINERY

By W. H. WAKEMAN.

Chapter X.

Fig. 38 illustrates a "double deck" boiler, or in other words a return tubular and a plain cylinder boiler connected by three necks of ample size. For ordinary boilers these are about ten inches in diameter which supplies free passages for the circulation of water in everyday service.

The products of combustion pass over the bridge wall, under the lower shell, and return towards the front through the tubes which fill this shell. Passing upward they flow backward again, enveloping the connecting necks, acting on the upper part of the lower, and the lower part of the upper shell, and thence making their escape to the chimney. As the hot gases reach the middle of the upper shell it is necessary to carry the water line above this point, but there are no tubes to take into consideration.

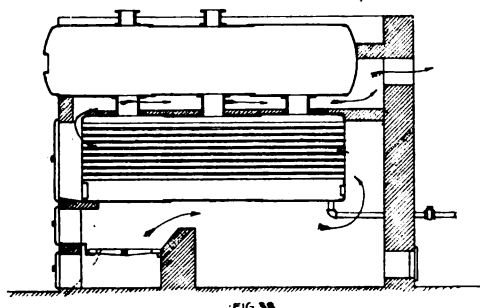


FIG 38

The upper shell can be entered by an inspector through a suitable manhole in the front head, and it is possible to examine every part of its internal surface. It is also possible to inspect that part of the lower shell which is below the tubes, but the upper part of this shell and the necks are inaccessible, and their condition cannot be determined except by applying the hydrostatic test, and it is well known that this test shows that the boiler to which it is applied can withstand a certain pressure, but it does not tell how near the parts are to complete failure. This is not only correct theory, but the result of my own experience with, and observation of these boilers.

It appears as if this boiler would be very economical in the use of coal when compared with the single shell return tubular type, but it has not always proved so in practise. If the latter is used under conditions that deliver the products of combustion to the chimney at a temperature of 600 degrees Fahr. or more, there is chance for improvement. If the second shell is added to a boiler in use under this condition, it will absorb some of the heat and make a better showing, but before this is done the efficiency would be very low and after the addition is made the final result will not be superior to what can be secured from a single shell return tubular boiler that is well designed for the load it must carry. As this has been demonstrated many times, it proves that the more complicated boiler is unnecessary, and proper returns are not secured in practise for the extra expense involved.

Fig. 39 illustrates another kind of a boiler which consists of an addition to the common return tubular, but in this case

the complication is warranted, because it consumes smoke that would otherwise be a nuisance. The operation is as follows: The products of combustion pass over the bridge wall and return to the front through tubes with which the lower shell is filled. In the front bonnet they are ignited by heat from the furnace, coming up through small passages provided for this purpose. Air is admitted at this point to assist combustion. This process consumes the smoke and generates additional heat that would otherwise be wasted, for if these gases are not brought into contact with flames they pass to the chimney unconsumed, resulting in loss of much heat.

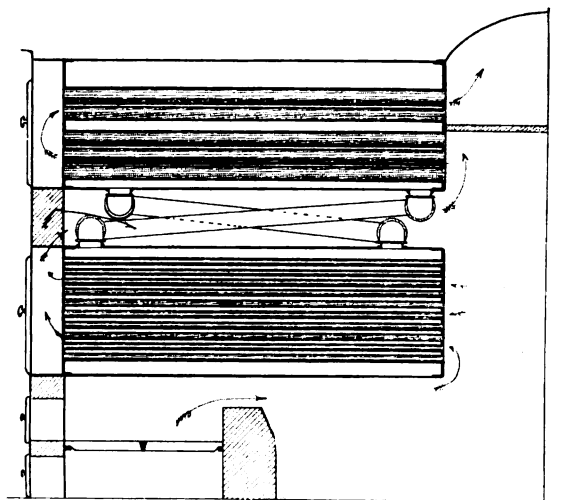


FIG 39.

Passing under the upper shell the heat goes into flues either six or eight inches in diameter, and returns to the front, turns and goes backward through another set of flues to the chimney. The water line is carried at the center of the upper shell, therefore the hot gases traverse the whole length of the boiler four times below the water line, and once above it, giving ample time for nearly all available heat to be absorbed by the water, while any that may be left superheats the steam. While steam cannot be superheated in a closed vessel, in contact with the water from which it was generated, it can be superheated on its way through a boiler.

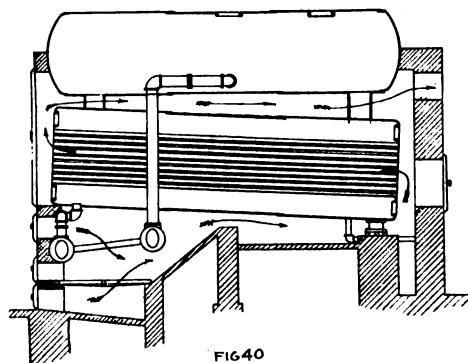


FIG 40

I have seen the inventor of this smoke consuming boiler open the upper doors on the front of a return tubular boiler, apply a torch to the gases coming through the three inch tubes, and cause them to burn fiercely until the whole bonnet was filled with flames, thus showing that much heat was passing to the chimney in the form of unburned gases. There was no special appliance of any kind on this boiler.

Fig. 40 illustrates a patented furnace of peculiar design, that was invented for the purpose of burning smoke, to use a common expression, but more properly speaking to prevent the formation of smoke. The upper shell is set level, but the lower one is higher at the front end. They are connected by two necks fifteen inches in diameter. The lower door on the front is for the removal of ashes in the usual way, but the pit is much deeper at the bridgewall than at the front. Above this is the furnace door opening into a furnace of well known construction, through which air flows upward in the usual way, and the products of combustion pass over a bridgewall built at an angle of forty-five degrees.

Above the ordinary furnace door is another of the same size opening into another furnace, but when the boiler is in operation air enters this door, strikes the top of the fire and is drawn downward through it into the other furnace and thence goes to the chimney in the usual way. This furnace is fitted with a water grate as shown, which adds to the heating surface.

The inventor of this furnace guaranteed it to consume ninety-five per cent. of the smoke, and this was accomplished in practise, as there was none whatever except a small amount when the fires were disturbed. This boiler evaporated 10.8 pounds of water from and at 212 degrees Fahr. with one kind of coal, and 11.5 pounds with another, thus making good the guarantees for it.

(To be Continued.)

"DOUS" SEQUEL

Under the above heading in the January number of GRAPHITE, we said that Mr. Reed of the School Department claimed that the school people say that there are three words in the English language of common everyday use that end with the four letters "dous."

We inferred that Mr. Reed and the school people thought it would be very difficult to name the three words ending with "dous." We therefore invited the readers of GRAPHITE to help us out. We now know that when we look for information to the readers of GRAPHITE we are bound to get it.

We have had some very interesting letters in reply, among which the following are fair samples.

Mr. J. Seip, editor of *The Red Seal Monthly*, Philadelphia, says:

"It affords me *tremendous* pleasure to assist the 'Dixon Force' in solving Mr. Reed's *stupendous* query regarding the *hazardous* subject contained in the January edition of GRAPHITE."

Mr. Nealley, of our Boston office, writes as follows:

"We were interested to read in the January issue of GRAPHITE the article entitled 'Dous,' and you will be interested to know that the young ladies in the Boston office have discovered the word in less than fifteen minutes. They discovered it was not a swear word, in fact you doubtless realize it would be rather *hazardous* to mention a swear word in the city of Boston."

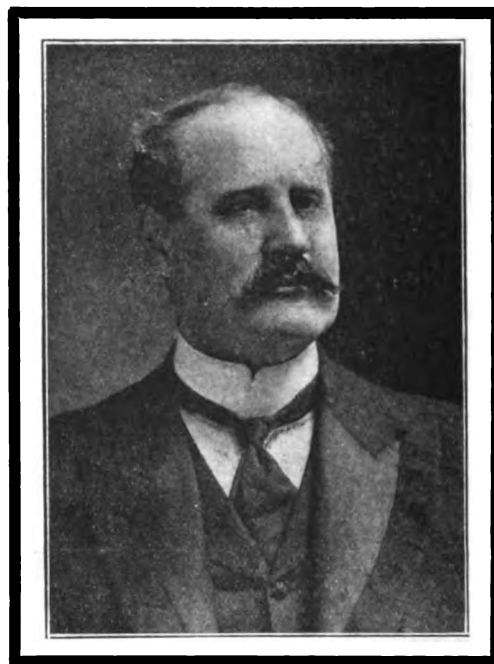
Mr. Geo. W. Cone of Riverton, Va., says:

"If you are engaged in any *stupendous* enterprise, you will have to take some *tremendous* chances, and you may eliminate many *hazardous* risks by the use of the Dixon products."

Mr. Geo. E. B. Putnam, Department Editor of the *Boot and Shoe Recorder* of Boston, writes:

"It is easy to find words ending with 'dous,' in fact, here are plenty of them; possibly all you need to answer Mr. Reed: *hazardous*, *hybridous*, *multifidous*, *nodous*, *olidous*, *pteropodous*, *stupendous*, *tardigradous*, *tremendous*."

Curiously enough, two of the parties interested in these words have been insurance men, and the word which troubled them most was *hazardous*. One of them failed to guess it at all, and the other only discovered it through its accidental use by a friend.



George B. Bascom, who for the past eight years has had charge of all accounts and detail at the Ticonderoga office of the Joseph Dixon Crucible Company, died on February ninth after a short illness.

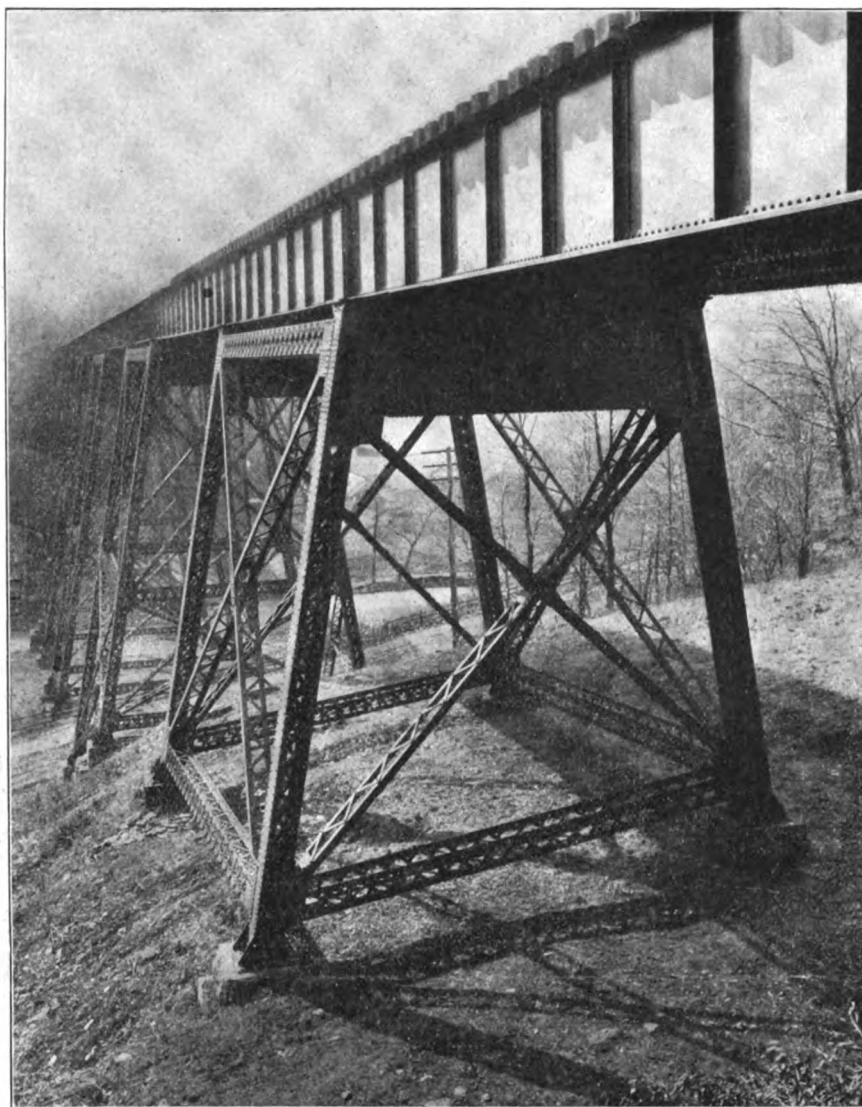
In Mr. Bascom the Dixon Company loses a most valuable and faithful aid. There was a solidity, reliability and enthusiasm in Mr. Bascom that made him valuable in whatever he undertook. He was solid in body, and solid in character. When he said a thing, he meant it: when he undertook a thing he did it. He was kind and helpful to all in his charge, and although he was quick to detect errors made by those under him, which he never allowed to pass unaltered, yet all of his corrections were so kind as never to give offense.

He was a most excellent organizer, and a good business man from every point of view. He was resourceful, and never at a loss either to comprehend or execute any piece of business.

He had most excellent moral qualities, having church and masonic connections.

He was kind hearted almost to a fault, and in expressing its own sorrow for its loss, the Dixon Company extends its heartfelt sympathies to all who knew and loved him.

DIXON's graphite publications will be sent free to anyone upon request.



BRIDGE AT MEDIA, PA.

The picture shows a railroad structure at Media, Pa. Many paints had been used for the protection of this bridge, and tests with various paints conducted.

In the early part of 1906, the entire structure was cleaned and given two coats of Dixon's Silica-Graphite Paint. The paint is not in need of renewal today after three years' service, and is good for some years to come—just one more example of perfect protection.

THE FEMININE FOOT

At last the question of the size of a woman's foot has been taken up in a serious way. We have heard much of the size and weight of a man's foot, while the size of a woman's has been shrouded in mystery and its weight a negligible quantity.

It is a fact, attested to by the most learned sociologists, that nearly all women demand shoes several sizes smaller than their feet. Great confusion has prevailed in the shoe trade as to actual sizes, there being no uniformity in marking. Thus a No. 2 shoe might be any actual size from a $4\frac{1}{2}$ to a $6\frac{3}{4}$.

In order to meet the demand of the fair customers humanely, it has been the habit of the trade to prevaricate in the marking of shoe measurements. Now the National Association of

Boot and Shoe Makers has under advisement a proposed standardization which, if carried out, will result in a uniformity of deception that will be a great boon to clerks in shoe stores.

The New York Times, from which we take the above, adds that they have heard of no movement on the part of shoe manufacturers to restore the heels of women's shoes to their proper place, under the heel of the foot. According to sharp observers, they now seem to be directly under the ball of the foot. The effect is picturesque, and the pedestrian skill acquired by the wearers of the shoes so grotesquely made is amazing to men.

WEST POINT, Pa., November 10, 1908.

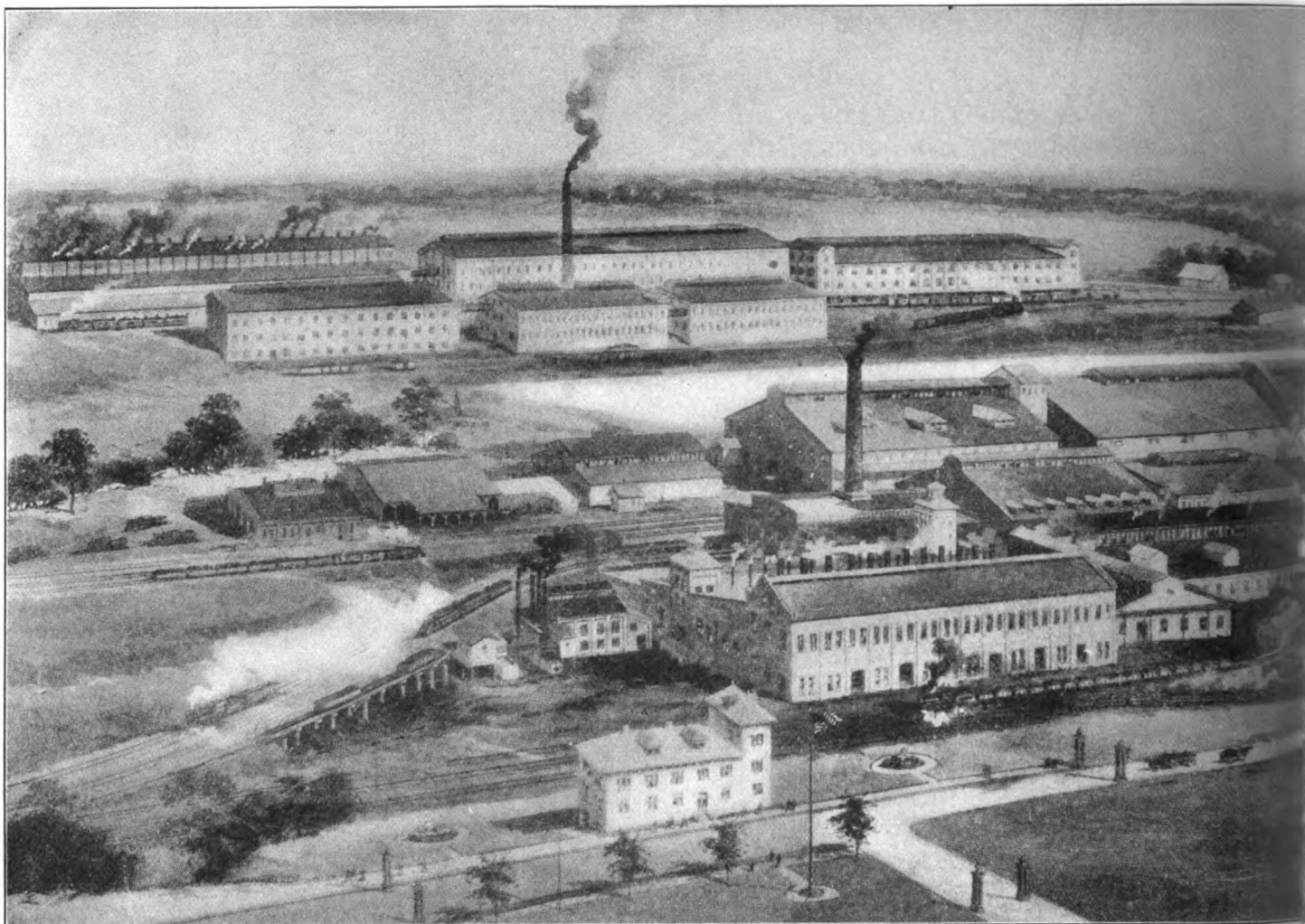
Joseph Dixon Crucible Company,

Philadelphia, Pa.

Replying to yours of the 3rd inst. in regard to your sample of Dixon's Graphite Air Brake and Triple Valve Grease, beg to say that our shop man claims that it is the best grease he has ever had for Controllers and Engineer's Valves—one pound will go as far as three of any other grease we have ever used. Kindly send us a ten pound can by U. S. Express to West Point, Pa.

Very truly yours,

_____, Supt.



THE ATLAS PORTLAND CEMENT COMPANY

The above picture shows one of the largest cement plants in the world, located at Northampton, Pa., with offices in New York City. All of their buildings are not shown in the picture, as the Atlas Portland Cement Company have made many improvements since the picture was secured, and up to the present time have under way several projects of magnitude, and their facilities for turning out a still greater capacity of cement are being increased all the time.

The Atlas Portland Cement Company has a capacity of about 10,000 barrels a day. This company has the contract for supplying all the cement for the Panama Canal.

This celebrated plant uses only the latest type of machinery, and may be regarded as a model of perfection. In keeping with their practise to use only the best, Dixon's Silica-Graphite Paint is used to preserve all structural steel. Dixon's Black is used for their stacks, which successfully withstands for the longest time the destroying influences of extreme heat, smoke, gases and exposure to the elements. In the cement region, Dixon's Black is the standard of all protective coatings.

A BERKELEY (Cal.) bookseller, anxious to fill an order for a liberal patron, wired to Chicago for a copy of "Seekers After God," by Cannon Farrar, and to his surprise and dismay received this reply: "No seekers after God in Chicago or New York. Try Philadelphia."

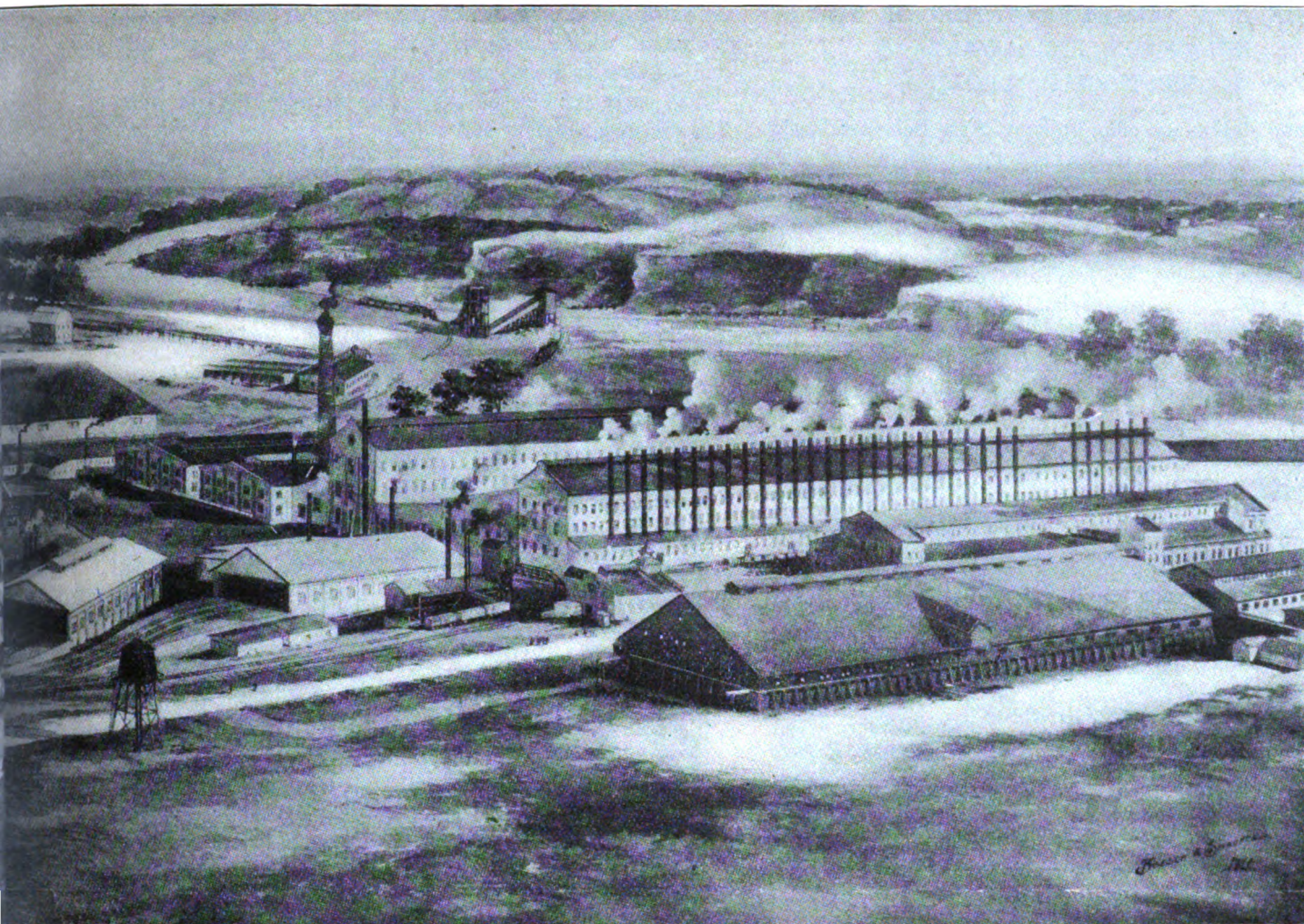
WHAT HAVE WE DONE TODAY?

We shall do so much in the years to come,
But what have we done today?
We shall give our gold in a princely sum,
But what did we give today?
We shall plant a hope in the place of fear,
We shall speak the words of love and cheer,
But what did we speak today?

We shall be so kind in the after while,
But what have we been today?
We shall bring to each lonely life a smile,
But what have we brought today?
We shall give to truth a grander birth,
And to steadfast faith a deeper worth,
We shall feed the hungry souls of earth:
But whom have we fed today?

We shall reap such joys in the by-and-by
But what have we sown today?
We shall build a mansion in the sky,
But what have we built today?
'Tis sweet in idle dreams to bask,
But here, and now, do we do our task?
Yes, this is the thing our souls must ask,
"What have we done today?"

—NIXON WATERMAN.



CITIZENS GAS COMPANY OF KANKAKEE, ILL.
F. E. NEWBERRY, Manager, 280 Dearborn Avenue.

February 4th, 1909.

*Joseph Dixon Crucible Company,
1324 Monadnock Building, Chicago, Ill.*

DEAR SIR:—

We have your communication under date of the 3rd at hand, and in reply wish to state that Dixon's Silica-Graphite Paint that our company purchased from your people three years ago, has given perfect satisfaction on our holders, as the two holders that we have in operation were painted with the same and we cannot recommend or praise too highly the qualities of your paint.

Respectfully,

CITIZENS GAS COMPANY,
(Signed) F. E. NEWBERRY.

SPRING PAINTING

You often speak of the wisdom of Solomon. Has it ever occurred to you to follow his example in so far as permanency in all details is concerned. Detail means dollars. Many details mean thousands of dollars. If you are making an investment in cash, you generally want the help of those of experience and reliability. The Dixon Company's reputation extends over a period of eighty years: the record of our Paint Department and Dixon's Silica-Graphite Paint, forty-five years. If you will consult us concerning your spring paint-

ing investment, the interest will be an attractive yield, no assessment for many years.

Since the advent of Dixon's Silica-Graphite Paint forty-five years ago, we have helped our customers pay regular dividends by maintaining their properties at the lowest expense for paint and painting.

Thousands of our patrons will testify that our reputation is deserved, because the success of Dixon's Silica-Graphite Paint, which has been proven the most reliable investment from every point of view—economy in point of first cost on account of good covering power and easy applying qualities; the maximum durability eliminating expense for frequent repaintings; satisfactory in color.

If you are contemplating the repainting of your bridges, buildings, standpipes, gas holders, roofs or fences, you should secure a copy of "Colors and Specifications," and write our Paint Department for expert suggestions upon Maintenance Painting. We have made some money-saving suggestions for our patrons.

A HARD ORDER

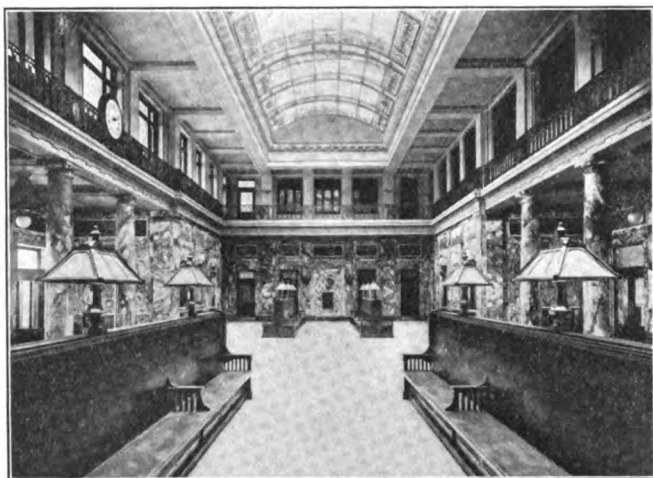
Mike had only recently been made foreman of the section gang, but he knew the respect due his rank.

"Finnegan," he said to an argumentative assistant, "I'll have nawthing out of you but silence—and mighty little of that."—*Youth's Companion*.

THE NEW SCRANTON STATION OF THE DELAWARE, LACKAWANNA & WESTERN RAILROAD

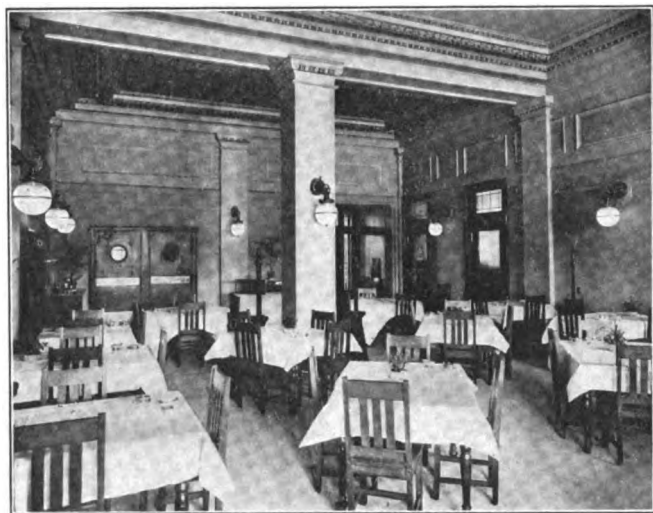
The new station and office building of the Delaware, Lackawanna & Western R. R. in Scranton, Pa., was formally opened on November 11, when the Scranton Board of Trade gave a reception in it to the officials of the railroad and to prominent business men and citizens.

The station building is a five story and basement structure measuring 83 x 338 feet in plan. The exterior walls up to the first story level are granite, above which Indiana limestone is carried to the level of the fifth floor, the remaining story and the cornice and ornaments being of white terra-



WAITING ROOM

cotta. The structure has a steel frame with concrete fire-proofing. The interior partitions are hollow terra-cotta blocks and the stair treads are marble laid on steel stair frames. All foundations are concrete.

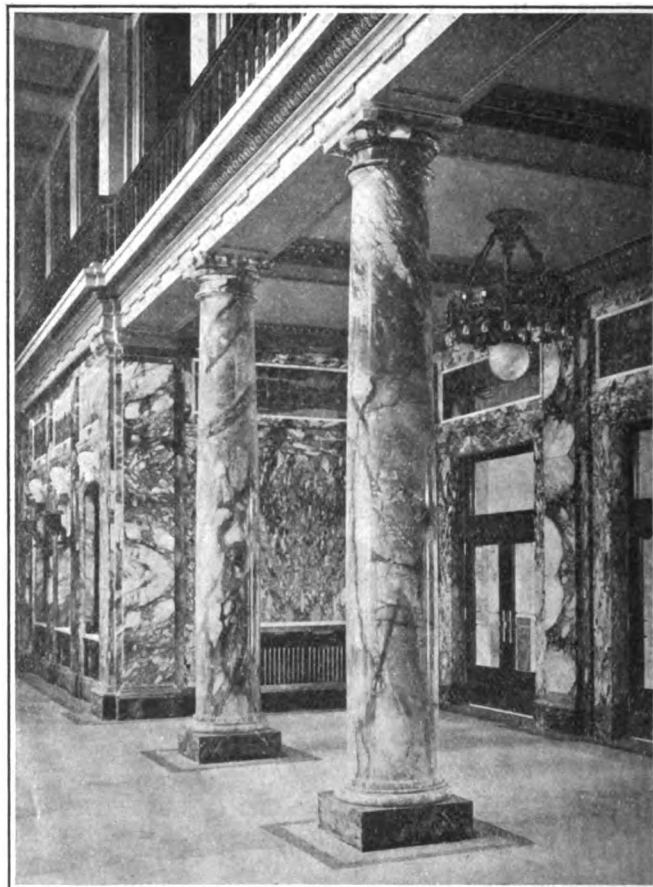


RESTAURANT

The first floor contains the facilities for handling the passenger business and the office of the general paymaster. The main waiting room, occupying the center of the building, is exceptionally handsome and measures 104 feet 2 inches by

38 feet 4 inches. The width is considerably increased in the center on both the north and south sides for the main entrance and the exit to trains respectively.

The walls are finished entirely in marble in warm tints. The pilasters, columns and window framing are light Sienna marble and the remainder of breche violette. Conspicuous in the ornamentation are thirty-six faience panels, two feet high and varying in length according to the location, which depict scenes along the Lackawanna. They are in soft warm colors and are framed with a narrow rim of white marble. Two of these are particularly striking, a river view of the Hoboken Terminal of the railroad, and the lower end of Manhattan Island as seen from the Hudson River.



EXIT TO CONCOURSE

The room has a height of thirty feet, extending through both the first and the mezzanine floors. The ceiling is an arch of leaded glass which has movable sections at intervals to allow of ventilation. The room is illuminated by concealed lights above the cornice, just below the arched glass ceiling, by concealed lights above each of the faience panels, by lights on brackets around the walls and by lamps on the seats.

A considerable area at the east end of the first floor is occupied by the dining room, lunch room, kitchen and serving room. The dining room measures 26 x 40½ feet. The part of the east end not devoted to the restaurant facilities is occupied by the general paymaster, his offices being on the ground floor for convenience in receiving the large number of men paid from the office. In order to facilitate the loading of the pay car a special entrance has been built to the platform.

All floors in the rooms devoted to handling passengers are

of terrazo with inlaid mosaic borders. The building above the mezzanine floor has a court in the center directly above the main waiting room, affording good lighting of the latter by day. The mezzanine, second, third and fourth floors are occupied by offices.—*Engineering Record*.

The steel work of the Scranton station is painted with two coats of Dixon's Silica-Graphite Paint.

SO-CALLED "FOLLIES"

And How They Ended

When Wm. G. McAdoo said that he was going to take up the work that had been abandoned by two English syndicates after they had sunk millions of dollars in attempting to build a tunnel under the Hudson River from Jersey City to New York City, his friends told him that he was foolish; they pointed to the record of those who had preceded him in the undertaking and emphasized the difficulties to be overcome, called attention to the money that had been spent, told him that capital would not come to his aid, and showed every possible discouragement, but he went ahead, and his undertaking has become an accomplishment, and now he receives the praise.

Years ago the Dixon Company advocated the use of graphite as a lubricant, claimed that no matter how carefully the cylinders of an engine were machined, there were microscopical irregularities, and that these irregularities should be built up by Dixon's tough, smooth graphite so there might be a graphite-to-graphite contact rather than a metal-to-metal contact. The Dixon Company were discouraged in every possible way, were told that no solid substance should be introduced into an engine cylinder, were told that graphite would cake or ball up, that the cylinder head would be knocked out, and various other things would happen.

Later on a constructing engineer of one of the largest engine builders in the country remarked that it was a fact that his gas engine started off and run smoother and gave less trouble than any other make of engines, and then confessed that the secret was in the graphite treatment that he gave them before assembling them or starting them.

Today graphite lubrication by means of Dixon's Ticonderoga Flake Graphite is a world wide practise, and graphite lubrication is a pronounced fact.

About the middle of the eighteenth century Louis Hallam said that he believed a regular theatre would pay in New York City. He was laughed at, and told that the city would never support a regular theatre. He said, "It will some day support a dozen," then he was considered absolutely crazy. The dozen theatres that he talked about have now become ten times a dozen.

Forty odd years ago the Superintendent of the Dixon Graphite Mines at Ticonderoga, N. Y., wanted to do some painting. He was a long distance from any source of supplies, and being a man of strong common sense, and of a good deal of scientific knowledge, reasoned it out that Dixon's Graphite and the silica which is mined with it, should prove a most serviceable paint. He knew that graphite and silica were impervious to the action of acids, not affected by heat, were light in weight, and pound for pound should cover two or three times as much surface as red lead, and to his mind would be equally durable. He made up what he considered a proper

proportion of the pigments, ground them with the best boiled linseed oil, and painted roofs and machinery, as well as other surfaces. After many years of service, the paint seemed quite as good as when he applied it, and then he called the attention of the Dixon Company to it.

This is practically the beginning of all graphite or carbon paints, of which there are a dozen brands on the market today, some good, some not so good, and some worthless. Some are simply so-called graphite paints, others are made and advertised as carbon paints, and are serviceable and good. Because, however, of the peculiar formation of Dixon's Graphite there is very good reason to believe that there is no carbon or graphite paint on the market so good as Dixon's Silica-Graphite Paint.

As in the case of Dixon's Lubricating Graphite, Dixon's Silica-Graphite Paint is known the world over, and the people who laughed at the idea of a graphite paint some twenty-five years ago are using it and swearing by it, not at it.

There are many other so-called follies that have been laughed at and later on adopted as something indispensable for our comfort as well as our happiness.

ON A NORWICH, CONN., TOMBSTONE

Sacred to the
Memory of
Henry Harris

Born June 27, 1721, of Henry Harris and Jane, his wife. Died on the 4th of May, 1737, by the kick of a colt in his bowels, peaceable and quiet, a friend to his father and mother and respected by all who knew him, and went to that world where horses can't kick, and where sorrowing and weeping is no more.

IN *Mineral Resources of United States* for 1907 we find the following: "Cheaper grades of crystalline graphite, known as dust and sweepings, are used in the manufacture of stove polish, foundry facings, paints, etc." That this is done we shall not attempt to deny, but the Dixon Company make no use of "dust and sweepings" for Dixon's Celebrated Stove polish, Dixon's Fine Plumbago Facings or for Dixon's Silica-Graphite Paints. For such grades only the best materials are used.

USED FLAKE GRAPHITE IN STEAM CYLINDERS

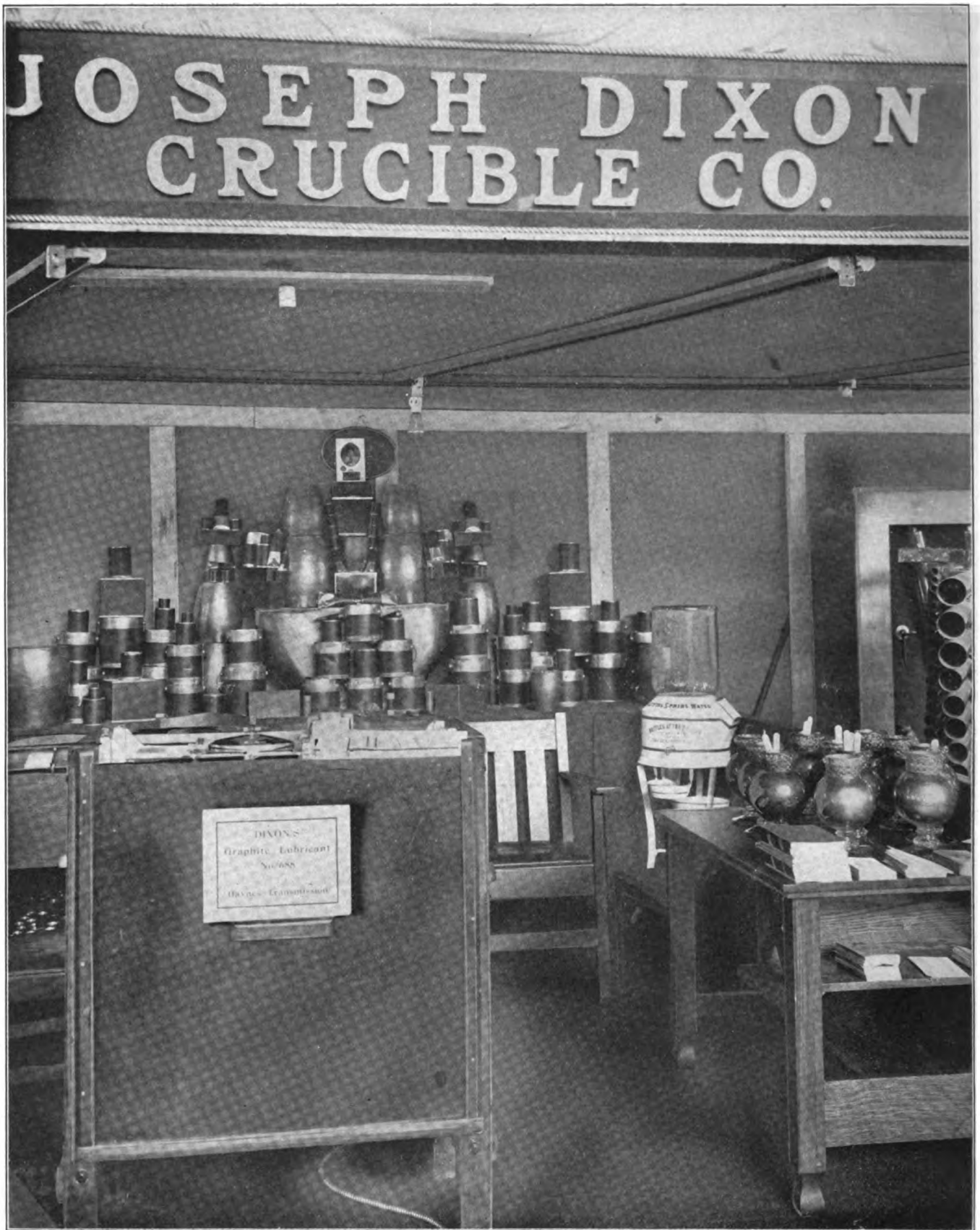
GENTLEMEN:—

I used sample of graphite in steam cylinders and on gaskets and I find it superior to any other I have used. No, I won't have any difficulty in obtaining your graphite, as it is kept by dealers in Portland, Ore. I sent by a friend for some of your graphite, but they gave him some made by the _____ Company, which wasn't near as good.

Yours very truly,

G. E.

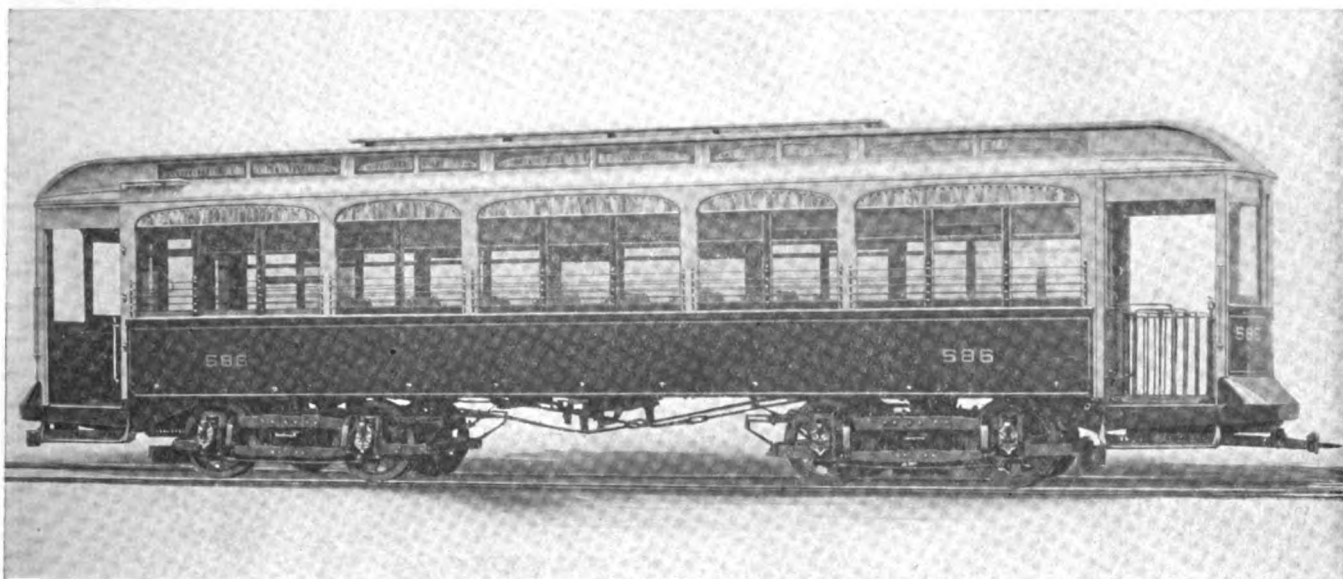
A MIXTURE of lead wool and graphite is now being successfully used for packing valves. It is used in the same manner that asbestos or other similar packing is employed. This mixture may be used for high temperatures and has some advantages over asbestos.—*Brass World*.



DIXON BOOTH AT MADISON SQUARE GARDEN

The above picture shows a very good view of the Dixon Booth at the recent Automobile Show held in Madison Square Garden, New York City. In the foreground at the left are the transmission gears running quietly in Dixon's No. 688.

The case was kindly loaned us by Haynes Motor Car Company of Kokomo, Ind. The exhibit was in the care of the same Dixon boys who were at the Central Palace Show: Messrs. L. H. Snyder, H. W. Van Kuren and M. L. Rowe.



BRILL CARS FOR WASHINGTON

We show herewith a picture of one of the electric cars used for city and suburban travel at Washington, D. C.

The cars operate on two branches of the Washington Railway and Electric Company's lines, which serve desirable residence districts with transportation to the business area of Washington.

These cars are handsome modern models of construction. Low drop platforms are employed which permit of rapid and easy ingress and egress of passengers, and other good features are included.

We are glad to be able to add that Dixon's Silica-Graphite Paint was used on the trucks of these cars. For the severe service to which car trucks are put, Dixon's Paint is advisedly used. It is in hard service that Dixon's gets a chance to show its real value.

DIXON SCHOOL DRAWING PENCILS

We have thoroughly appreciated the fact that the ideals of American education are far higher than the mere learning of reading, writing and arithmetic. Nature teaches by objects, and next to the object itself, for purposes of instruction, comes its visual representation on paper. The best educators of this country have held that drawing has educational merits of the very first importance. It trains the eye and the hand, as well as the mind.

Now what is needed in a drawing pencil is not merely smooth, tough lead, but also that nameless, elusive quality which produces soft, broad, "sketchy" lines, such as are made by light and shade in Nature, where no harsh, hard lines are ever seen; and it costs money to get this quality. That was the great difficulty. It was hard enough to get the quality, no matter what it cost; but to get it at a cost that would place the pencil within the reach of the average school board, was indeed a tough problem.

But the Joseph Dixon Crucible Company have solved it. They have evolved a pencil that is intensely black, perfectly smooth, and extremely tough, and which will yield the soft, "sketchy," natural effects demanded by art.

They have, in other words, evolved the ideal pencil for school drawing, and can sell it at a price which places it within the reach of any school board. These pencils are made in all degrees of hardness, from S, or soft, to VH, or very hard, and are absolutely uniform in quality.

The use of color in some form in elementary drawing has been demanded for a long time. In the lowest grades in some cities, colored papers are used in simple, decorative work; but these constitute an impracticable medium if the aim is pictorial representation, no matter how elementary. In the higher classes, water colors are sometimes employed; but they are difficult to handle, and the brushes, boxes, cups and water are embarrassing "impediments" to both the pupil and the teacher.

The Dixon Company, realizing the importance of color work as a factor in the education of the young, have spent a great deal of time and money in perfecting their Colored Crayon Pencils. The object has been to secure uniform quality in the product, plus vividness and variety in color, so that no one color would vary in smoothness, softness or toughness from another, but all would be equally "true" and beautiful.

Dixon's Colored Crayon Pencils can be used by the youngest as well as by the oldest pupils, and they have the superior advantage of being always ready for use with no more preliminary than mere sharpening—and, indeed, within reasonable limits, the less a crayon pencil is sharpened, the softer, prettier, and more effective is the line. Dixon's Solid Crayon Pencils without the wood casing do not require sharpening at all.

Not the least of the advantages arising from the use of Colored Crayon Pencils is the improvement which results in the drawing with the regular black pencil and sketching crayon, the aroused interest of the pupil spurring him to greater effort and enthusiasm in all his school work.—*School Board Journal*.

YOU HAVE probably found occasions where oil or grease did not give quite the service that was demanded for greatest efficiency. These are just the times when Dixon's Flake Graphite proves its marked value as a lubricant.

If you have never tried Dixon's Flake Graphite, we shall be glad to furnish you with a sample for trial.

Dixon's Paint On Woodwork

Besides being an unexcelled preservative coating for iron and steel, Dixon's Silica-Graphite Paint is used to advantage on exterior woodwork such as factory buildings, city and country houses, fences, shingle roofs.

Because of its good covering qualities and ease of application, Dixon's Paint saves on first cost; because of its marked durability, it obviates the expense of frequent repainting.

We have a new circular on this subject that includes some time records and specific instances; shall we send you a copy?

Joseph Dixon Crucible Company,
JERSEY CITY, N. J.



GRAPHITE

VOL. XI.

APRIL, 1909.

No. 4.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

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WHAT MIGHT HAVE BEEN

Both advocates and opponents of government ownership should be able to appreciate the following clipped from *Success*. In this one instance, at least, most of us are probably satisfied with Uncle Samuel's service.

"Owing to the financial depression, the Postal Trust has decided to raise the price of carrying letters to ten cents a penny-weight. It is also intimated that a great many employees will be laid off, while the rest will be forced to accept a material reduction in wages. It is expected that this action will be strenuously opposed at first, not only by the employees, but also by the National Correspondents' Association; but when it is once thoroughly understood that the Postal

Trust in adapting this policy is inspired only by a desire to meet the next dividend of five hundred per cent., it is believed all objections will be withdrawn.

"Mr. P. O. Letterman, the great postal magnate, gave out a statement yesterday in which he called upon all the people to buy Postal Common and to be patient during the next year or two, provided the depression lasted that long, if letters were not delivered as promptly as heretofore. The reason for this is that a number of postal cars have been taken off and are now empty on the sidings. Mr. Letterman was very optimistic, however, and stated that, with a few very important exceptions, everything was all right."—ELLIS O. JONES.

MATAURA, NEW ZEALAND, April 9, 1905.

Joseph Dixon Crucible Company,
Jersey City, N. J.

Would you kindly send me your "Graphite as a Lubricant." I may say we have used your graphite daily in our engine room and have never known it to fail, although grease and oil have failed at the same work.

Thanking you in anticipation,

Yours truly,

Engineer Freezing Works.

DIXON'S graphite publications sent free upon request.

HORSE VS. AUTOMOBILE

From A Horseman's Point of View

According to Patrick J. Murphy, "the automobile with its self-made dust somewhat obscures the horseman's view, and to look with an unprejudiced eye he is often compelled to consult an oculist. The horseman's view is generally from behind, and in the philosophy of life the man who is behind the times is apt to speak ill of them, on the principle that nothing looks well from behind.

"Diplomacy is the art of seeming to tell the truth without lying, and a solitary horseman in the midst of his mechanical rivals must needs be a diplomat.

"All men think they are good for something, even for husbands. Unfortunately, choosing a husband is like picking mushrooms. If it is a mushroom—you live; if it is a toadstool—you die. We hear so much of bad husbands—the question of the day is—do married men make the best husbands?

"A good road bristles like a porcupine with temptations. A cynic has observed we can resist everything but temptation; but anyone can resist temptation when it is offered by the wrong person at an inconvenient time.

"Automobiles start with best intentions. There is a certain place—which shall be nameless—that is paved with good resolutions, and in automobile life, 'the ditches are filled with after-thoughts.'

"In the litany of good intentions is the lady who perfumes her gasoline. In an accident it may solace the last moments of the mangled victim to know that he will die in an atmosphere of roses."

BENJAMIN FRANKLIN TO HENRY LAURENS

A portion of a postscript of a letter written by Benjamin Franklin is reproduced below. It suggests Franklin's powers of introspection, but the "shoe fits" us all.

"As to my infallibility, which you do not undertake to maintain, I am too modest myself to claim it, that is, in general; though when we come to particulars, I, like other people, give it up with difficulty. Steele says, that the difference between the church of Rome and the church of England on that point, is only this: that the one pretends to be infallible and the other to be never in the wrong. In this latter sense, we are most of us church of England men, though few of us confess it so naturally and frankly as a lady here, who said, 'I do not know how it happens, but I meet with nobody, except myself, that is always in the right.'"

—Brentano's *Wisdom of Benjamin Franklin*.

ESTABLISHED 1827.



INCORPORATED 1868



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

OFFICERS:

President—GEORGE T. SMITH
Vice Pres.—WILLIAM H. CORBIN
Treasurer—GEORGE E. LONG
Secretary—HARRY DAILEY

DIRECTORS:

GEORGE T. SMITH	WILLIAM H. CORBIN
GEORGE E. LONG	EDWARD L. YOUNG
WILLIAM MURRAY	HARRY DAILEY
WILLIAM G. BUMSTED	

SALESROOMS AND OFFICES:

NEW YORK SALESROOM, 68 Reade Street.
PHILADELPHIA SALESROOM, 1020 Arch Street.
SAN FRANCISCO SALESROOM, 145 Second Street.
CHICAGO OFFICE, 1324 Monadnock Block.
BOSTON OFFICE, 636 John Hancock Building.
PITTSBURG OFFICE, 2213 Farmers' Bank Building.
ST. LOUIS OFFICE, 501 Victoria Building.
WASHINGTON, D. C., OFFICE, 814 14th Street, N.W.
BALTIMORE OFFICE, 1005 Union Trust Building.

WHAT IS YOUR OPINION?

One of the trade papers in the technical field, and a most excellent one, recently printed a little article in which it condemned the house organ in both theory and operation. The article stated that the house organ can hold no real interest for its readers, such as it has. The article contained more to the same effect, but this was the sum and substance of it. What we are interested to know is whether readers share this opinion?

If there are any who receive GRAPHITE and either feel that they do or do not take an interest in it, we would be glad to hear from them with an expression of their opinion. Perhaps you receive other house organs and enjoy or fail to enjoy these. We would also like to have any information on this subject you may be able to give us. In other words, we would like to have your opinion from the reader's standpoint on house organs in general and GRAPHITE in particular. Probably we shall review in some later issue of GRAPHITE this subject,

publishing extracts from some of the letters we hope to receive, but we shall publish no extracts of opinions or names unless this permission is given.

The house organ necessarily cannot compete with the trade paper for several reasons. The average house organ is distributed free and contains little or no advertising. It therefore has little or no source of revenue, which is supplied to the trade paper through its subscriptions and the sale of advertising space. On account of its superior financial position the trade paper can better cover the particular field in which it is interested. It can pay more to its editorial staff, and get men particularly adapted for this class of work. Then, as it devotes itself exclusively to publishing, it naturally is able to get more out of it for the given expenditure than is possible to the concern with whom publishing is what might be termed a "side line."

As we see it, however, the carefully prepared and well edited house organ has a certain interest for its readers. We know this to be true in many instances, because some of our readers have been good enough to write and encourage us in our efforts. We should like to get as large an expression of opinion as is possible on the subject and are looking to secure the truth of the matter, rather than flattery. If you do or do not like GRAPHITE, or do or do not like house organs in general, we would like to have you write and unburden your mind to us.

FROM THE FRANKLIN COMPANY

SYRACUSE, N. Y., February 22, 1909.

Joseph Dixon Crucible Company,
Jersey City, N. J.

DEAR SIR:—

Your letter of the 20th inst. received.

We have met with very good success with your graphite in quite a few different instances, but especially upon the worm driven axle on our truck it has been very satisfactory. It has been the means of our utilizing this axle and obtaining efficiencies from this worm drive that were not possible without the graphite.

Yours truly,

H. H. FRANKLIN MFG. CO.,
JOHN WILKINSON, Engineer.

MATHESON HONORS

In the 300 mile midwinter contest from Philadelphia to Wilkesbarre and return, three Matheson cars won first, third and fourth places. Altogether, there were thirty-two contestants.

We are informed by our Philadelphia Office that Dixon's No. 675 Graphite Transmission Grease was in the transmission cases of these three winning Matheson cars.

The time taken in covering the course by the cars was respectively five hours, twenty-four minutes, which was the fastest time of the day, and broke all records; five hours, thirty-one minutes; and six hours and four minutes.

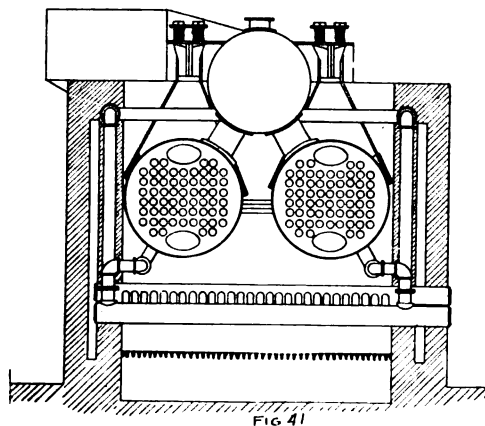
A PROMINENT shoe manufacturing company is testing Dixon's Graphite on the leather used in the soles of their shoes for the prevention of "the squeak."

PREVENTING CORROSION OF STEAM MACHINERY

By W. H. WAKEMAN.

Chapter XI.

Fig. 41 illustrates a boiler consisting of two tubular boilers set on a level, and one plain cylinder above them. In each front head of the former there are two man-holes as shown, and this arrangement affords better facilities for complete inspection than is usually provided for boilers of this type. There is a man-hole in the top of the plain cylinder and this makes it an easy matter to tell the condition of this part and to keep it clean and free from scale.



These three shells are held together by two large necks at each end, thus making it practically a unit. As the water directly over the furnace becomes highly heated, its weight per cubic foot is reduced, which causes it to rise through the front necks into the plain cylinder. Cooler water in the rear part of these shells moves forward to take the place of this water. The highly heated water has now parted with a portion of its heat during the process of generating steam, hence it rushes to the rear, comes down through the rear necks and thus completes the cycle.

The front part of this boiler is supported rigidly, but the rear is held by slings which are intended to take about three-quarters of the weight while the remainder is carried by rollers resting on iron-capped piers. This distribution of weight is made possible by the intelligent use of powerful spiral springs resting on a girder that is supported by a cast iron column at each end. There is probably no better way of providing for expansion and contraction due to changes of temperature, both horizontally and vertically.

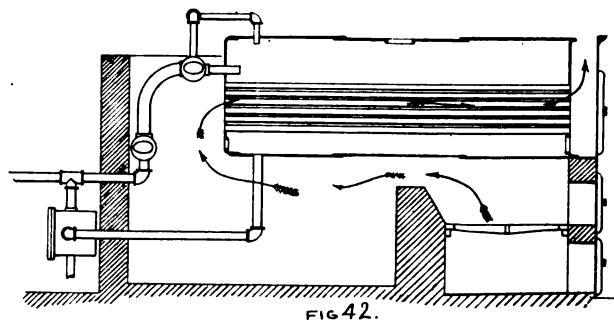
More attention should be paid to the location and care of rollers that are used to support the weight of boilers, and at the same time allow them to freely lengthen when heat is applied, and shorten when they are cooled. As a general rule these rollers are only rough pieces of iron and they rest on cast iron saddle plates which have not been planed, but are used just as they came from the foundry. No attempt is made to preserve them from rust and corrosion, neither are they always free from mortar or cement when put in place. When we consider the great weight supported in the case of a large boiler, and the need of free action in practise, it is plain that there is much chance for improvement, especially when

we know that they are sometimes placed at right angles to their proper position, thus allowing for expansion of the diameter, but not of the length of the boiler.

In view of these facts it is plain that engineers and others who have charge of this work, should not fail to secure steel rollers because they are round, and being harder than iron they retain their form better under heavy weights, thus reducing friction to a minimum, and this always prolongs the life of the brick setting used in connection with these boilers, for if the rollers move hard when expansion must take place, a crack in the brick work results, and after it is once started it never grows smaller.

Care should be taken to have the cast iron plates on which these rollers rest made true and smooth, also the lugs which rest on the rollers, for it is very unsatisfactory to a careful engineer to put three rollers under a lug and then find the surfaces so rough that all of the weight rests on one of them. Careless engineers consider such precautions unnecessary, but good engineering practise calls for them nevertheless, and after all of the foregoing recommendations have been adopted, but before the rollers are put into position all of the metal surfaces should be treated with Dixon's Graphite Lubricant No. 677. This is a preparation of graphite and grease which can be easily applied with a brush, and the results secured will well repay the small expense and little trouble required by the operation.

Several years ago I had charge of a plant consisting of one battery of tubular boilers, and the blow-off pipe from each of them was carried through a square hole in the rear wall. This hole was covered by a loose iron plate with a hole in the



center for the pipe. When a boiler so fitted was cooled off, it would contract from the rear as the front was held rigidly, consequently this plate would be drawn tightly against the wall. Building a fire under it caused expansion that carried the plate one-quarter of an inch away from the wall, thus repeatedly giving a practical demonstration of the application of this principle.

In the foregoing illustrations the products of combustion move upward from the furnace to the chimney, but in other kinds of boilers they flow downward for a portion of the distance, as the designers seem to think that this gives the heat a better chance to be taken up by the iron and transmitted to the water. While it is possible to do this, there is no special necessity for it, as boilers not utilizing this principle give equally good results. Several years ago I had charge of one in which there were two upper shells twenty-two feet long and thirty inches in diameter, connected to a lower one twelve feet long and fifty inches in diameter. There were no tubes

in the former, but the latter had 100, three inches in diameter, which filled it except a space at the bottom large enough for a man hole. Hot gases passed over the bridgewall, moved along between the upper and lower shells, then went down through holes in the brick setting to a space under the larger shell where they flowed along towards the front until the back of the bridgewall turned them upward into the tubes, when they passed to the chimney. Shavings were burned in this plant, from which flames thirty feet long could be observed through a small hole in the setting.

In numerous cases tubular boilers have been installed which were not large enough to evaporate the required amount of water, and there was not room in which to locate more of them, consequently additions were made to increase the heating surface. This is accomplished by adding tubes, or by an outside appendage that is intended to catch heat that might otherwise be lost.

Fig. 42 illustrates an attachment of this kind, consisting of an upper header that is supported by the side walls, and a lower one near the rear wall. These are connected by a row of bent tubes extending across the combustion chamber. The upper header is connected to the water space by one pipe and to the steam space by another. The bottom header is connected to a trap or sediment chamber outside of the setting. This trap is also connected to the bottom of the boiler as shown. Ample connections are always necessary in a device of this kind, as intense heat evaporates the water quickly, hence more must come into it in order to prevent the parts from being burned.

(To be Continued.)

SOME HINTS ON THE CARE OF CHAINS

Under the above heading *Motorcycle* contains an article by F. B. Widmayer, during the course of which the writer gives the following instructions for lubrication of the chain.

"Every 500 miles take off chains, clean thoroughly in kerosene or gasoline, then put them in a shallow tin pan, with a mixture of mutton tallow and flake graphite, and bring to a boil over the fire for a few minutes. There should be but a teaspoonful of graphite, or when this is not available, ordinary cylinder oil will do, and only enough of this mixture is necessary to just cover the chains as they lay flat in the pan. Then take them out, hang up to allow the tallow to drip off, and replace on the sprockets. Chains so treated will run as sweetly and nicely as a belt, and their mileage capacity will be greatly prolonged."

The owner of the motor cycle was instructed against neglecting the chains as follows:

"Don't let chains get stiff and rusty through want of cleaning and lubrication. If you will give them a little common sense care, you will have little or no trouble and will find the chain a very efficient drive or transmission."

IN REPACKING the gland of a water circulating pump, use plenty of Dixon's graphite with the packing. The spindle is seldom sufficiently lubricated, and the graphite will go a long way toward remedying this. So says *Motor Print*, and so says Dixon.



Dixon's Flake Graphite

About the Shop

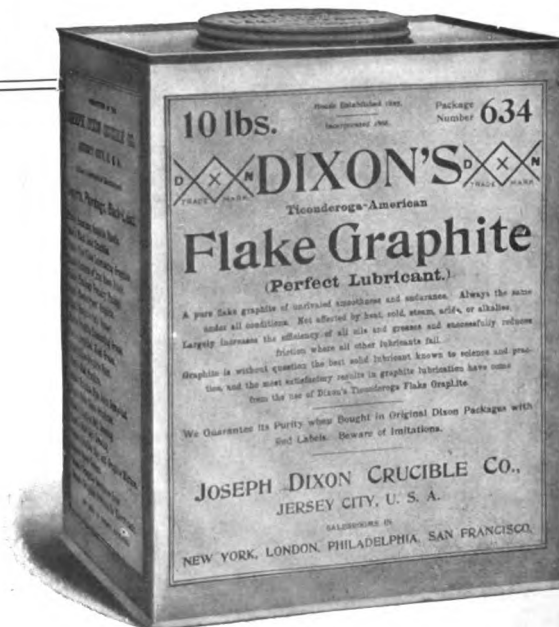
Machinists use Dixon's Flake Graphite for bearings, planer vs. lathe centers, and so forth. Engineers use it in cylinders of both steam and gas engines, valves, and all bearings.

Dixon's Flake Graphite is the only lubricant that has proved its ability to prevent seizing of contacting parts—oil or grease alone cannot do this under excessive strain.

Dixon's Flake Graphite is positive in principle because it goes directly to the cause of friction, microscopic roughness, and provides the metals with a graphite coating.

Write for our little booklet, "Dixon's Ticonderoga Flake Graphite," which tells all the whys and wherefores.

Joseph Dixon Crucible Company
JERSEY CITY, N. J.





GRAY STONE HALL

"Gray Stone Hall," the illustration which accompanies this article, is the new \$200,000 home of Mr. Philip E. Sharples, of the Sharples Separator Company, West Chester, Pa., erected at Green Hill Station, near West Chester, Pa. The building was planned by Mr. Charles Barton Keen, Bailey Building, Philadelphia, and is one of the most attractive residences in this vicinity. Mr. Keen's style of architecture is that of the English Tudor period.

The Sharples home, general contractor for which was Mr. Thomas M. Seeds, Jr., Philadelphia, is fire-proof in the same sense as the modern skyscraper, and the possibility of shrinkage in the wood and plaster work has been eliminated.

The structural iron, furnished by Mr. J. C. Jones, Philadelphia, is protected from corrosion by two coats of Dixon's Silica-Graphite Paint, admittedly the best preservative for this class of work.

A recent article in *Printers' Ink* gave a brief outline of the Sharples Separator Company's business. Twenty-eight years ago Mr. Sharples was an apprentice in a foundry in West Chester, Pa. Upon the completion of his apprenticeship, he started in business for himself manufacturing hand separators. The Sharples Company are heavy advertisers and recognize this force in modern business. They are reputed to spend \$100,000 in farm papers.

DIXON'S graphite publications sent free upon request.

PURCELL, OKLA., January 19, 1909.

Joseph Dixon Crucible Company,
Jersey City, N. J.

GENTLEMEN:—

Your inquiry received and wish to inform you that I have your samples No. 1 and 2, and am using your graphite regularly in plant I have charge of. Am using it both on engine valves and all fast running bearings, also on heavy machinery and find it is absolutely the best lubricant I have ever used. Can save forty per cent on valve oil and increase the power of engine from three to five horse power. Can by using it on bearings save at least fifteen percent on oil and run machinery at higher speed and have no hot and cut journals. I would advise every superintendent of machinery in mills and elevators to get a supply and use it.

Yours truly,

J. A. ANDREES, Chief Engineer.

ONE prominent railroad has a belt line train which makes one hundred and twenty-eight (128) regular stops in a day's work. At the end of five (5) months it was necessary to clean the triple valves and relubricate them.

A test of Dixon's Graphite Air Brake and Triple Valve Grease was made on the above mentioned train, and after six (6) months service the valves were examined and found to be well lubricated, and no undesired quick action reported. Dixon's Graphite Air Brake and Triple Valve Grease will be the standard on this road.



DIXON IN WASHINGTON, D. C.

The above illustration shows the exhibit window of the Dixon headquarters at No. 814 Fourteenth Street, N. W., Washington, D. C.

Even to persons who are not specially interested in the products of graphite outside of lead pencils, this window has peculiar interest, and attracts much attention, as it has an attractive exhibit of Dixon's American Graphite Pencils, Dixon's Axle Grease, Dixon's Pipe-Joint Compound, Lubricating Graphite, Blacklead Crucibles, etc.

At the office there will be found, when not otherwise occupied, four bright able young men who are actively engaged in the sale of Dixon's Graphite Products.

The chief and oldest representative is Mr. Louis C. Witkowski, who has been with the Dixon Company many years. Mr. James G. Wonn, one of the best posted machinery men in the South, lately connected with the Machinery Department of the Fairbanks Company of Baltimore, Mr. William W. Conner, and Mr. James F. Kelly. To Mr. Conner the Dixon Company is specially indebted for good work in the direction of Dixon's Silica-Graphite Paint, in its promotion and in its sales. Mr. Conner was formerly connected with the Board of Education at Washington, and believing as he did in the value of Dixon's American Graphite Pencils, he proved a most effective ally in having them introduced in the District of Washington. He is today one of the best judges of lead pencils.

To Mr. Kelly the Dixon Company is indebted for specially good work in the introduction and sales of Dixon's Everlast-

ing Axle Grease. Dixon's Axle Grease in the hands of Mr. Kelly is demonstrated beyond any question to be the axle grease needed by every man that has a vehicle of any kind.

THE SONG OF THE MOTOR CAR

By JAMES BALL NAYLOR.

I'm the coy and ingenuous toy of the strenuous
Era of Civilized Man,
I'm the truly respectable, duly delectable
Outcome of project and plan;
And my gassy and thunderful, massy and wonderful
Shape splits the landscape in twain,
As I race where the fountain speaks grace to the mountain
Then over valley and plain. [peaks—

*Oh! it's—"honk, honk-honk!" is the song I sing
In the cool of the morning gray,
And it's—"honk, honk-honk!"—is the raucous ring
Of my voice at the close of day;
And the echoes wake—and the echoes quake,
In their sylvan retreats afar;
For I am the fizzing, the buzzing, and whizzing,
Redoubtable Motor Car!*

I'm the snappiest, pluckiest, happy-go-luckiest
Work of Man's reckless career—
The machine of divinity green asininity
Never can conquer or steer;
And there's never a note or bar honked by the Motor Car
Rounding an angle or curve,
But it cheats the pedestrian—beats the equestrian—
Out of his poise and his nerve.

*For it's—"honk, honk-honk!"—is the song I sing
In the blaze of the noonday bright,
And it's—"honk, honk-honk!"—is the raucous ring
Of my voice in the starry night;
And the echoes quake and shiver and shake,
In their rocky retreats afar;
For I am the puffing, the chugging, and chuffing
And masterful Motor Car!*

Through the haze of the dreamiest days of the gleamiest
Summer I speed to and fro,
In the height of the glorious, mighty uproarious
Tempest I come and I go;
I'm the tool and the servant, the cool and observant
Rare creature of project and plan,
And the coy and ingenuous toy of the strenuous
Era of Civilized Man.

*And its "honk, honk-honk!" is the song I sing
In the cool of the ev'ning's hush,
And it's—"honk, honk-honk!"—is the raucous ring
Of my voice in the morning's blush;
And the echoes wake—and the echoes shake,
In their woody retreats afar;
For I am the purring, the whizzing, and whirring
And marvelous Motor Car!*

—Collier's

A TRUE STORY

In Which Dixon's Graphite Motor Products Play a Leading Part

The story begins with a postal card received by the Dixon Company from Ridgewood, N. J., which said:

"Would you kindly send me printed matter on automobile lubrication with Dixon's Graphite? I have tried all the stores in this village, but can get none of your goods. I have charge of three autos, two with make-and-break ignition, and one with high tension. I am using Dixon's Chain Compound with success, and think of using Dixon's Graphite in my engines as well as on other parts, such as transmission, ball bearings, etc. A small sample will be appreciated."

We sent the writer a sample can of Dixon's Motor Graphite, which has been used with marked success for gas cylinder lubrication by many. We also sent some printed matter on Dixon's Graphite Products with directions for their use. A little later we received the following:

"Your favor enclosing literature on graphite lubrication has been thankfully received. I had purchased in the meantime one can each of Dixon's No. 2 Flake Graphite and No. 635 Special Graphite, and am using the No. 2 in my transmissions and the No. 635 Special Graphite in the crank cases of the three cars I have in charge. I seemed to notice a different behavior of the engines from the very start."

Replying to this second letter we gave some further instructions concerning the use of Dixon's Motor Products, and thanked the writer for his words of appreciation. We also asked him to report more fully when he had had more experience with the Dixon lubricants. Our letter brought forth the third chapter in this narrative:

"I have your request for more detailed information concerning the use of Dixon's Graphite. I am very glad to give you the result of actual and lengthy tests, and these should be worth while considering.

"First of all, it is useless to deny that graphite has a beneficial action on the lubrication of automobile cylinders, and also in the transmission case and anywhere else where it may be employed in conjunction with oils and greases.

"Secondly, which is a repetition of my former statement, it should be Dixon's Graphite if you want to be sure and not have unnecessary worry about the introduction of a substance of this kind in the engine of a costly motor.

"My experience is that Dixon's Graphite introduced in small quantities into the crank case every time that I have to add some oil, produces an instantaneous silencing in the running of the motor. It gives superior compression, and reduces the quantity of oil needed through the sight feed at least one half. That is to say, I am obliged to reduce the quantity of oil in order to get the best results.

"In removing the carbon from cylinder heads and pistons, I find that a little kerosene oil injected into the cylinders and standing over night will better loosen the carbon when graphite has been mixed with oil than when I used to use oil only. Graphite does not permit the carbon to set so hard as pure oil carbon alone.

"I am using graphite in my hand oiler and in oiling up all points I find that graphite has been a good friend to me, and therefore worthy to have as a constant companion."

After this very complete and definite letter, we thought it

might be of interest to repeat the story for the benefit of others; we therefore wrote to our customer whose fourth letter forms the concluding chapter.

"Your letter is at hand, and I am pleased to note that you are anxious to bring it to the notice of others in my line, that they may profit by my experience through the statements of my last letter. Indeed, you are helping along a good cause, and it has been no secret to me for many years that the largest amount of deterioration of machinery, in automobiles especially, was due to insufficient or wrong lubrication. There is no more crying need in the field of mechanics today than the thorough understanding of the theory and practise of lubrication, which to me it seems is or has been neglected even by practical men to some extent. You may use all or any of my statements you may please for any purpose, as you have my hearty approval and co-operation."

LUBRICATION OF BEARINGS

Yachting says: "It is an excellent idea to add to the oil a minute quantity, not more than a level teaspoonful to a half gallon of oil, of the finest flake graphite, ground especially for that purpose. A larger quantity is liable to settle, and it is also unnecessary because a very little graphite lasts a long time in the bearings. The small amount used in this manner will not interfere with the ignition."

This is well and correctly stated, and where Dixon's finely ground Flake Graphite is used only the very best and most satisfactory results will be obtained.

Yachting further says: "It is worth mentioning here that the addition of a very slight amount of graphite to the oil in the crank case will help the cylinder lubrication, if the cylinder lubrication depends wholly or in part on the crank-case splash. It is, in fact, safest to feed pure oil from the mechanical lubricator, and put the graphite only in the crank case. The result will be the same, and there will be no danger of clogged oil passages."

This statement is also wisely made, for no matter what is said to the contrary, all forms of graphite are heavier than oil, and even while the graphite appears to remain in suspension while the oil is cool, it will certainly settle when the oil becomes warm.

"Use a good quality of lubricant, and use enough of it. What may seem economy in the oil bill may cut a big slice off the value of your engine when you come to sell it," is another wise statement on the part of *Yachting*.

DIXON'S THE BEST OF SIX PAINTS

It is sometimes very unsatisfactory to ourselves, and it must be to our readers, not to be able to furnish names and places. Here is another instance where it would be discourteous to do so.

The chief engineer of maintenance of way of one of the prominent railroads of the country, made use of six of the best recommended protective paints in a test of endurance.

The final result proved Dixon's Silica-Graphite Paint the superior of the six paints in endurance and appearance.

The chief engineer in his letter to the general superintendent endorsed Dixon's Silica-Graphite Paint and made his letter as strong as we could have made it in our own behalf.

EASY METHOD OF SMOOTHING UP COMMUTATORS

Take a piece of ordinary soft tool grind stone and shape it to practically the same shape as the commutator; by holding the stone on the commutator after removing all of the brushes, let the machine run at full speed. The stone is to be operated by hand lengthwise of the commutator. If the commutator is a large one, for instance, forty inches in diameter, the stone will have to be larger in order to get the greater surface to bear on the commutator. If the stone is very large, it will be necessary to insert an eye bolt and use a small pair of rope blocks to hoist it up and to support it while in operation.

A commutator as large as forty-eight inches has been made almost as true in this manner in thirty minutes as it would be after spending perhaps a whole day with a turning tool, in fact, the grinding is much more satisfactory because it does not have the tendency to loosen the commutator bars that the turning tool has, and it will always bring the mica down to the level of the bars.

W. A. SWEET,
Supt. of Sub Stations, for Dominion
Power and Transmission Co.

Another method which has been successfully used along this same line, is to cut a wood block the shape of the commutator and paste fine sand paper upon the concave side, operating this in the same manner as the stone.

TO PROLONG LIFE OF DRIVING BELTS

To attain this direct object the outside of belts should be lubricated with pure whale oil and tallow. After work has been stopped in the evening, the belts are well cleaned with a brush, to be lubricated next morning. If this be done every ten weeks the inside of the belt need not be lubricated, except if it should slide on the pulley. Having been lubricated on the inside the belt will probably still be sliding, but as soon as the lubricant has been absorbed by the belt it will shrink and its driving power increases. Avoid using rosin, colophony, pitch, wax, tar, etc., as these substances harden the belt and soil the pulleys. The belt should be stretched before being placed in the lower loop. The tension thus caused should be five times the ordinary tension when working. When the belt has been running three to four weeks it no longer needs stretching. It should not be running on the pulley too tight, to avoid heating the journals. When not working, throw the belt off the pulley.—*Kerkmeister Zeitung*.

Following the above advice would mean the saving of belts and money. It may interest the readers of GRAPHITE to know that Dixon's Traction Belt Dressing meets all the above requirements. Finest fish oil, tallow, etc., and no rosin, wax, tar of other injurious materials. It comes in paste form only. No bar dressing can fill the bill.

OWNERS and drivers of chain driven cars will find their machines will run better if every time the car is washed the chains and sprockets are brushed off thoroughly with kerosene and rubbed over with a light coat of graphite and grease.

—*Motor Field*.

AFTER THE WINTER'S LAY UP

What Should be Done to the Automobile After its Long
Rest During the Winter Months.

Much has been written in the automobile papers, and much is still being said as to what should be done to an automobile after the Winter's lay up. Care must be taken to thoroughly drain the crank case of all the old lubricant, and more than this should be done, as the pockets should be carefully wiped out so as to free them from all sediment.

If, when the machine was laid up, kerosene was not used in the cylinders for removing the carbon deposits, then an ounce or so of kerosene should be put into the cylinders through the spark plug holes, and the crank turned fifty or sixty times. The kerosene will cut out the carbon deposits better than any other agent.

The front and rear wheel hubs and axles should be carefully cleaned and repacked with new grease, and the steering mechanism treated in the same way.

If a disc clutch is used, that should be thoroughly cleaned out with kerosene or gasolene if gummed, and then filled with a mixture of kerosene and cylinder oil, or with a light oil.

In cleaning out the disc clutch it is well, after the old oil is drained off, to fill the clutch with kerosene, replace the screw plug, set the lever at neutral and start the engine and let it run for a minute or two, even a little longer, then drain off the kerosene and fill as above stated.

If the lamps have contained oil all the Winter, it is better to replace wicks with new ones, as old wicks get gummy and so fully oil soaked that they are hard to turn up or down.

If a mechanical oiler is used, that should be tested so as to see if it fits properly. Some authorities claim that the mechanical oiler should be cleaned and thoroughly dissected before using, but that does not always seem absolutely necessary. Of course, all cups whether oil cups or grease cups, should be looked after, also the differential cleaned and properly lubricated, and for that matter every bearing point or every part that is in motion should be looked after.

PROBABLY TRUE

"A man ought to have as many wives as he can support and buy dry goods for."

"Most of us have."—*Houston Post*.



HOW GRAPHITE LUBRICATES

Graphite exists in two (2) forms; crystalline (or flake), and amorphous. It is known to the trade by the names of Black Lead, Plumbago, and Graphite. Black Lead usually refers to the inferior grades of graphite, plumbago to the Ceylon product, and graphite to the American product.

A distinguished characteristic of graphite is its unctuous quality, and all graphites have this quality, the crystalline more so than the amorphous forms for the reason that when a crystal of graphite is broken, the cleavage surfaces is smooth, while in the case of amorphous graphite, and because it is amorphous, the line of the fracture is necessarily irregular and rough. It is only when the irregularities are worn away that such a surface becomes smooth and unctuous.

This quality (unctuousness) is usually determined by rubbing between the thumb and finger. This method does not give entirely satisfactory results for reasons as follows:

Crystalline graphite, either flake, needle-like or irregular, is dense and compact, and not easily reduced by crushing between the fingers, so that the individual particles maintain their size and continue to be easily felt, while on the other hand the amorphous kinds of graphite, both natural and artificial, continue to be reduced in size until the particles no longer are evident to the touch, and the "unctuous" sensation comes into evidence.

A true lubricant has been described by some of the promoters of the suspension of graphite in oil as "a body that will subdivide so that all movement will be within itself and not between it and the adjacent metal;" also that a perfect suspension of graphite and oil "is of a nature that permits of slipping within its own mass without any expenditure of energy that will produce high temperature."

The close connection of the definition of a perfect lubricant and the mention of graphite as possessing the qualities of a perfect lubricant is deceptive. This definition of a true lubricant is a very excellent one and describes perfectly a liquid or semi-liquid substance where the material adheres to both friction surfaces and the globules between are in constant movement one on the other, but no stretch of our imagination can enable us to conceive such a condition when considering graphite, which is a solid substance and which requires considerable force to render the particles asunder.

A mixture, as indicated above, of graphite suspended in oil has no particular advantage over a non-graphited oil as a lubricating material, because the particles of graphite, being in perfect suspension, cannot break through the surrounding film of oil or easily become attached to the metal surfaces. They simply move about in the oil film without at all decreasing the viscosity of the oil itself, the only way in which any reduction of friction could be brought about. In fact, a mixture of finely divided graphite and oil has a higher viscosity than that of oil alone, and so reduction of friction is not to be sought along this line.

One of the real functions of graphite as a lubricant is to keep the metallic surfaces apart. But so would the presence of any solid material such as sand, carborundum or any abrasive substance, the fallacy of which is of course apparent. The separating substance, in addition to keeping the surfaces apart, must not in any way detract from the smooth frictional sur-

faces, and on the other hand must make them smooth when they are rough. Graphite fulfills these requirements, provided it becomes permanently attached to the surfaces. A reasonable doubt might be entertained as to whether graphite can readily become attached to the frictional surface if it is so fine that it passes through the pores of filter paper, as is claimed (by some), which would indicate that the particles of graphite are surrounded by an unbreakable oil film. But if these particles could become attached to the frictional surface efficient but not lasting aid to lubrication would certainly result.

As was said, amorphous graphites are extremely friable and easily worn away.

"Place a very little amorphous graphite on the palm of the hand and rub with the finger and notice that it cannot be rubbed off." The above has been cited as an evidence of the adhesiveness of amorphous graphite, but go a little farther, wash and dry the finger between repeated rubbings, and it will soon be noticed that the finger slides over the palm with difficulty, though the graphite still appears to be there. Now what has happened? Simply that the graphite, being so friable, has all been worn off the high points, while enough remains in the depressions to give the idea that it is all there. The very fact that the rubbing finger continues to get blackened between washings, shows how easily the amorphous graphite wears away.

Now place some crystalline graphite, preferably Dixon's Ticonderoga Flake, in the hand and repeat the experiment, and note how much less rapidly it blackens the rubbing finger.

It has been always understood that wear means friction. Because of this belief, steel wearing parts are tempered. Knife edge bearings of fine balances are made of hardest agate.

In all friction surfaces, there are irregularities both above and below the normal surfaces. It is the irregularities above the normal that cause the trouble, and it is important that whatever surfacing material is used should be able to build up the surfaces to the level of the high points, rather than to simply fill up the very minute pores of the metal. It is not conceivable that any particle of graphite small enough to go through a filter paper could become impaled on one of these projecting peaks, but such a result is entirely possible where the broad flake is used. Even on smooth surfaces the flake form of graphite adheres with wonderful persistence, and its resistance to wear due to its smooth crystalline surface and compaction is remarkable.

IT HAS been the happy opportunity of the Joseph Dixon Crucible Company to call attention to the error of commonly fixed habits in lubrication. Until Dixon advocated the use of Ticonderoga flake graphite it was the fixed habit of engineers, and others interested in lubrication, to depend on oils and greases. In cases of great distress and urgent need of time, cold water was resorted to for cooling bearings. Dixon's Ticonderoga Flake Graphite has solved many a problem in lubrication and will solve many more when the habit of using it, and using it properly, is established.

DIXON'S graphite publications will be sent free to any one upon request.

THE MELTING POINT OF LUBRICATING COMPOUNDS

J. MOTION.

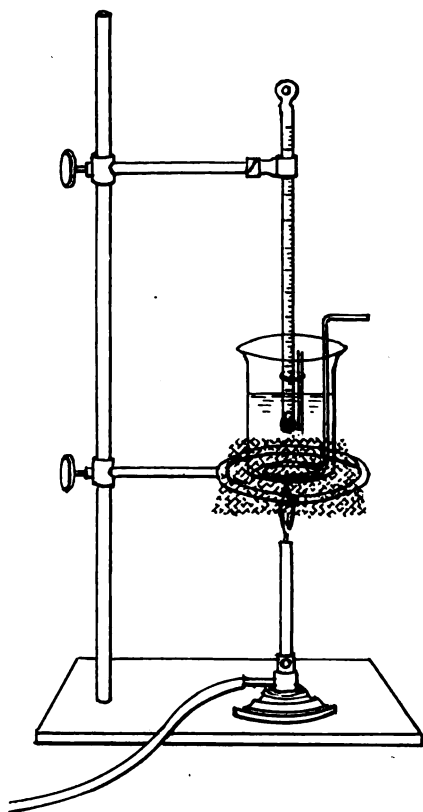
The question is sometimes asked, "What are the melting points of Graphite Lubricating Compounds?" An attempt to answer this question satisfactorily may be taken then as sufficient reason for the following article.

When speaking of the melting point of a substance, one generally has in mind the change of a solid to a liquid: as for instance, ice into water. In this case it may be said that the change is rapidly made, there is no intermediate stage.

A similar condition exists when melting paraffine wax, japan wax, stearine, and many other animal or vegetable fats, the difference in temperature between the solid state is only a few degrees.

With lubricating greases the condition is altogether different: the majority of these are placed on the market in a semi-solid state, and although this is the case, the range of temperature necessary before complete fusion takes place, is sometimes very great.

It is only natural then, that the lubricating grease to have the preference, will be the one showing the least physical change over a moderate range of temperature.



It therefore follows, that when the results of melting point determinations are to be considered, the nature and consistency of the lubricant at normal temperature should be observed, and careful attention given to any change while heating, until complete fusion or melting takes place.

The best and simplest method for determining the melting point of a lubricating grease is a modification of the capillary tube method, frequently used when examining an animal or

vegetable fat for a similar purpose. Instead of a fine hair-like tube a larger one having an inside diameter of an $\frac{1}{8}$ " to $\frac{3}{16}$ " is used.

The glass tube is cut to a length of three or four inches, and is usually slightly tapered at its lower end; both ends are left open.

The tapered end is dipped into the grease at normal temperature (60° F.) until enough has risen to fill an inch of the tube. It is then fastened to the bulb of a thermometer by a thin elastic band, and the thermometer with the tube suspended in a glass beaker of water, so that the surface of the water is at least an inch above the top of the small column of grease. The water is then slowly heated at the rate of 4° or 5° F. per minute, and the temperature when the grease softens and rises in the tube is taken as the melting point.

Two determinations should be made, and results should not vary 2° F. The method is so simple that many tests frequently give the same figure.

The diameter of the tube—within a reasonable limit—makes no appreciable difference in the test; *e. g.*, a tube having a diameter of an $\frac{1}{8}$ inch will give the same result as one having $\frac{3}{16}$ inch.

The accompanying sketch shows the apparatus in place, and the melting points of the cup greases manufactured by the Joseph Dixon Crucible Company are as follows:—

No. 0.....	45° F.
" 1.....	100° F.
" 2.....	160° F.
" 3.....	196° F.
" 4.....	202° F.
" 5.....	207° F.

No. 0 was first cooled below the normal temperature, because at this temperature it is in a liquid condition.

In the choice of lubricating compounds for use under various conditions, the question of melting point sometimes plays an important part, and although much has been written on lubricating greases in general, very little has been said about the melting point determination and the physical conditions connected with it.

A knowledge of this sort is often required to ascertain the possible behavior and suitability for lubrication. The information also enables the engineer to be in a better position to choose the grade and quality of his lubricant, and not only is he then more qualified to say what he wants, but he also has the satisfaction of knowing that he is using the lubricant best suited for his special requirement.

Incidentally he is also saving money for his employer, through proper attention to the lubricating bearings of his machinery, by seeing that all the power generated is doing useful work.

If the consistency of a grease is too great—and this means in most instances its melting point is too high—more or less power is wasted in overcoming unnecessary internal friction.

"Lubrication is effected by interposing between the surfaces, films of liquid or soft solid substances, which decrease friction." (Archbutt & Deeley.) If the liquid film is too viscous, or if the soft solid substance has too much body—not of the proper consistency—a condition exists which is similar, but in a lesser degree, to that when two solids rub to-

gether, until the friction generates sufficient heat to cause the grease to flow freely and form the film between the actual rubbing surfaces.

The power required to perform this operation, is naturally lost work. Friction always generates heat, and the friction which was set up at the start in order to permit the lubricant to become thin enough, is called internal friction, because it is created within itself, and plays no useful part in proper lubrication.

The most desirable lubricant then, is the one having the lowest internal friction possible, and yet remain on the bearings.

A very interesting fact touching on this point, was brought out in making the above tests.

It was found that these lubricants possessed the same melting points before the flake graphite had been incorporated, but their internal friction was greater. The additional process required to incorporate the graphite, together with the flakiness of this lubricant itself, render the resulting products softer and more pasty.

So that in every case, the compound is softer than the corresponding grade of an ordinary cup grease which does not have flake graphite in its make up; and its consistency remains in the same state over a larger range of temperature.

Even grades No. 4 and No. 5, which are usually hard and stiff, are now much softer and smoother, and show to great advantage when compared with other cup greases having a corresponding number.

All the lubricating compounds whose melting points are recorded here, are therefore in a condition to do work at once; friction is not required to reduce them to the proper consistency, but instead of that, the question of internal friction has been reduced to the lowest point possible in a lubricating cup grease, which, it is needless to say, is not only a step in the right direction, but a very decided improvement.

WHEN GRAPHITE HELPED

From *Power*

There seems to be quite a number of engineers who do not realize the beneficial qualities of graphite, but I have found it very useful. The ball bearing on our vertical belt-driven centrifugal pump used to wear out very quickly, and feeding plenty of good grade oil did not help matters, the bearing only lasting from two to four weeks, when it had to be renewed.

This bearing consisted of two hardened steel rings, each ring being grooved to receive the balls. The shaft of this pump was hung vertically, and the lower grooved ring fixed in position, while the top ring revolved with the pump shaft. In a short time the grooved rings would wear out, causing the wheel to drop so low as to rub against the bottom of the pump shell.

The last time this bearing was renewed I mixed graphite with machine oil and applied to the bearing about every two hours. In using graphite in this manner I found it was only necessary to renew the bearing every seven or eight months.

In another case a bearing on a long line of shafting began to run hot one forenoon, and the only way to keep running till the noon hour was by applying graphite every two hours. At noon time the bearing was examined and we found that

the babbitt was so badly worn that the shaft was running on the iron shell. As there was not time to rebabbitt the bearing during the noon hour, the shaft was kept in operation during the afternoon by applying graphite mixed in grease about every two hours. That night the box was rebabbitted. As the shaft was cut badly, it was smoothed up as much as possible with a file, but it still ran quite warm in the new bearing, but graphite mixed with oil soon made it run cool.

In cases where a man- or hand-hole plate gasket is in bad shape and there is not another gasket of the size in the plant, I have found it a good plan to paint this gasket very heavy with graphite mixed with a little paint or linseed oil. This will fill up all uneven places and grooves in the gasket, making a tight joint again. Care should be taken to put the man- or hand-hole plate back in the same position as it was when taken out. By this method I have made rubber gaskets with cloth insertion last a year, being taken out once a month.

In one case, in removing the hand-hole plate on a closed heater, the gasket was found cracked in two. As there was no gasket of the size in the plant and no sheet packing to make one of, a piece of drawing paper was placed between the gasket and the plate and thickly painted with graphite mixed with oil. Then the old gasket was placed on top of the paper and another paper on top of the gasket and painted in the same way. When the plate was put in place no leak developed with pressure on the heater.

I also use graphite on the threads of every stud or bolt I put in place, as it is an easy matter and saves about half the work when they are taken out again. In many cases I have saved studs and bolts from breaking when removing by having put graphite on the threads when they were put in place.

Milwaukee, Wis.

H. A. JAHNKE.

SOUTH ORANGE, N. J., January 26, 1909.

Joseph Dixon Crucible Company,
Department H.

GENTLEMEN:—

In reply to your letter of the 25th inst. would say that I used your graphite transmission grease on a pair of universal joints that would squeak in spite of all I could do, and stopped when I tried your graphite. I haven't had any trouble since I secured a large supply of your graphite at our local dealers.

I didn't dare to use your motor graphite, as you advised in the little book, until one day one of the motors in my charge got stiff and it was almost impossible to crank it, so something had to be done, either take it apart and loosen it that way, or let it run and ruin the bearings. So I took your graphite and mixed it with a light oil and a little kerosene. This I put into the crank case and started the engine and it loosened right up.

Yours very truly.

Chauffeur.

MATHESON ADOPTS DIXON'S GRAPHITE GREASE

After severe and lengthy tests made by the Matheson Motor Car Company, in which were represented some half dozen different lubricants, the Matheson Company adopted Dixon's Graphite Transmission Grease No. 675 as the standard for use on their cars. The action of a company of this kind is significant and requires no further comment.

Maintenance Painting

If you could increase the service of the paint on your bridges, viaducts, water towers, signals and all exposed steel work, what would it mean to your company? Wouldn't it run into thousands of dollars?

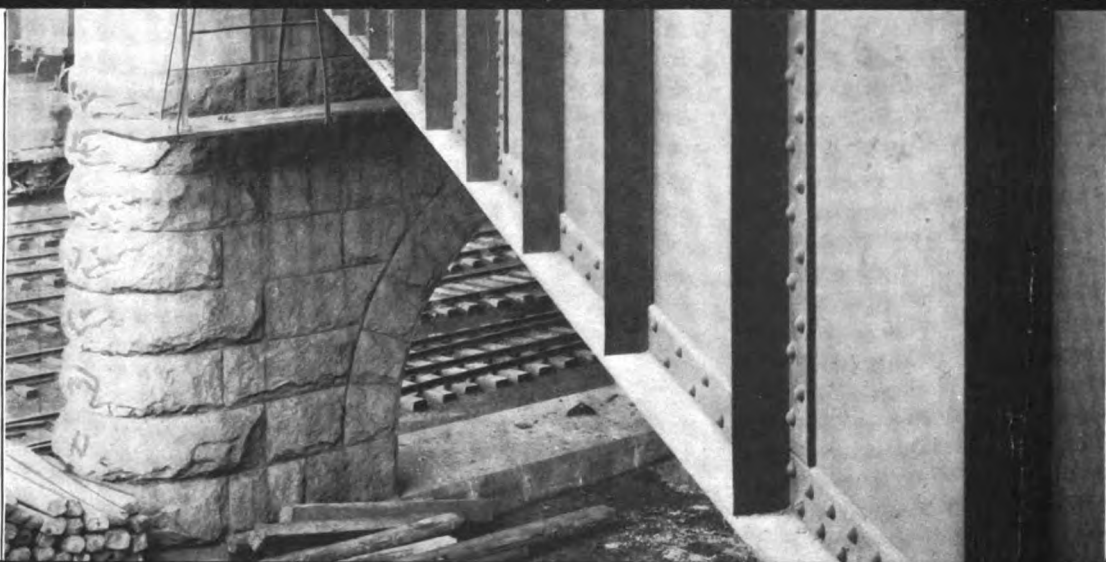
The cost of the paint is a small matter as compared with the cost of labor in applying it. But the consideration of what paint is a big matter and one we would like to help you with.

Do you know that there is a forty-five years' record behind



DIXON'S SILICA-GRAPHITE PAINT

"The Proven Shield for Steel Work"



Write for 1909 Edition of "Colors and Specifications"

Joseph Dixon Crucible Company

Paint Department,

Jersey City, N. J.

GRAPHITE

VOL. XI.

MAY, 1909.

No. 5.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

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EXPLOSIONS IN AIR RECEIVERS

We have from time to time published in the columns of this paper, the danger that always exists when using oil as a lubricant for air compressor cylinders.

We reproduce an article which appeared in *Power* and *The Engineer*.

The receivers of air compressors, in addition to the possibility of wasting, are liable to risk of explosion as a result of the accumulation of oily deposit. We could easily recall, if necessary, several explosions of this kind, some of which have been destructive and fatal, and the fact that explosions may arise in this way only adds to the desirability for their periodic inspection and overhaul. As usually arranged, an air compressor

is an excellent dust trap, and situated, as it often is, near the boiler house, this largely consists of coal dust. Mixed with oil carried over from the cylinder, this forms a pasty mass which collects in corners and needs only the requisite temperature to start combustion, which, under suitable conditions, produces an explosive effect. The conditions favorable to this are a high degree of compression and imperfect cooling arrangements, coupled with irregular lubrication. The temperature that may be reached with adiabatic compression, i.e., without gain or loss of heat through the walls of the cylinder, and which is approximated to with imperfect cooling arrangements, is higher than the flash point of many oils, and therefore care should be taken that there is free circulation of the cooling water in the jacket of the compressor; and when the pressure is high, stage compression with inter-cooling, and also, where possible, after-cooling, should be adopted. The lubrication should be effected automatically, and not merely at the will of the attendant. Further, only oils of a high flash point should be used. The fish or animal oils, or petroleum, should be rigorously excluded. With reasonable care and attention there is no risk of explosion with air compressors, even with very high compression, but it is well that those working them should recognize the sources from which troubles may arise.—*Mechanical Engineer*.

Our booklet "Air Compressor Lubrication," explains fully the advantages to be gained by the use of graphite as a lubri-

cant for air compressor cylinders, and has many practical suggestions for the best application of the same.

It has been proven by actual experience that the use of oils may be entirely eliminated by using Dixon's Flake Graphite, or the quantity of oil reduced to a minimum, better lubrication being obtained and the danger of disastrous explosions, caused by the vaporization of inferior grades of lubricating oils forming an explosive mixture in air lines and receivers, being eliminated.

DIXON CRUCIBLE COMPANY MEETING

Old Board of Directors and Officers Re-elected

At the annual meeting of the stockholders of the Joseph Dixon Crucible Company, the old board consisting of Geo. T. Smith, William Murray, William H. Corbin, Edward L. Young, Geo. E. Long, William G. Bumsted and Harry Dailey, was unanimously re-elected. The board of directors re-elected the former officers, namely, Geo. T. Smith, president; William H. Corbin, vice president; Geo. E. Long, treasurer; Harry Dailey, secretary. William H. Corbin was also re-elected as counsel.

The stockholders present expressed themselves as thoroughly satisfied with the management of the company by its officers.

Of the total number, 9953 shares, there were represented 8728 shares.

DON'T SNIVEL

Don't snivel about the world or something or somebody, but become a doer of things.

Mr. Roosevelt has become the best advertised man in the world because he has been a doer of things. There was no escape. Not only during the panic of 1907, but many times before, and sometimes since, Mr. J. P. Morgan stood out head and shoulders above the throng, as the man who was doing things. These men and many others—enough to fill a book, could be called up—have come into the public eye and have been on the tip of the public tongue, not because they sat down and sniveled about something or somebody, but because they themselves stood for something.

So says Milton J. Platt in *Fame*.

THE way then to be a good citizen is to understand. Good or evil, it matters little—only the understanding must be all-sided. No person who thoroughly comprehends evil, will be evil. And the converse is equally true. He who understands good will be good. The more he understands its glorious liberties the better he will be.—*National Food Magazine*.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,

Plumbago, Black Lead.

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Vice Pres.—WILLIAM H. CORBIN
Treasurer—GEORGE E. LONG
Secretary—HARRY DAILEY

DIRECTORS:

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GEORGE E. LONG	EDWARD L. YOUNG
WILLIAM MURRAY	HARRY DAILEY
WILLIAM G. BUMSTED	

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 BALTIMORE OFFICE, 1005 Union Trust Building.

REDUCES THE COST OF OIL ABOUT 68%

Our Chicago office sends us in a letter from Levi Kiyo of Gall, Wis., in which that gentleman claims, and from other reasons we have no doubt whatsoever as to the truthfulness of his claim, that Dixon's Lubricating Graphite has proved to be far more than he ever dreamed of, and that in a very severe test it reduced the cost of his oil about 68%. Furthermore, that in their plant they are now not bothered with hot boxes as they used to be.

Mr. Kiyo states further that there was one journal in their plant which gave them a great deal of trouble, being hot most of the time. When they began using Dixon's Flake Graphite they started by feeding graphite to this particular journal, and in less than a week the trouble had disappeared, and that they would not now be without graphite for ten times its cost.

They have discovered beyond any question that the important fact in this matter of lubrication lies just where the Dixon Company has always claimed it lay, in the roughness

of bearings. Dixon's Flake Graphite fills up all of the microscopical irregularities of the bearing surfaces, smooths out all the roughness and makes a graphite-to-graphite contact instead of a metal-to-metal contact.

No graphite other than flake graphite can properly do this, as all other graphites that are in powdered forms are washed out with the oils.

The Dixon Company now knows that some of the most reputable oil and grease manufacturers are advocating the use of Dixon's Graphite.

They know from long experience that the Dixon Company are not making any claim to do away with oil. On the contrary, that the Dixon Company claim that it looks after the bearings first, and the oil men and the grease men come in then with proper lubricants, and smooth running machinery is the result.

DIXON'S FLAKE GRAPHITE FOR MOTOR CARS

The following letter comes to us, and following our usual custom we reproduce the same verbatim, omitting the writer's name.

Joseph Dixon Crucible Company,
Jersey City, N. J.

Your letter of the 15th at hand, asking me how I found my tests with the graphite. Yes, I tested the graphite on my bearings on auto and found that it worked slick. Before I used the graphite I used oil, and there seemed to be a grinding noise in my engine all the time, but as soon as I used the graphite it stopped and that is how good my tests were. I am now getting a supply from my New York dealer.

Thanking you for your samples,
 Yours truly,

GRAPHITE FOR STICKING MATRICES

The *Inland Printer* recently had a request for information from one of their readers on how to cure the sticking of matrices. In reply the *Inland Printer* wrote in part:—

"Run out and stack the matrices on a galley and wipe the ears with a brush moistened slightly with gasoline. Then polish with *graphite* on a cloth. Clean the magazine with a dry brush and then with the brush dampened with gasoline, and then polish with *graphite* on the dry brush."

We add, with much satisfaction, that Dixon's Linotype Graphite is the recognized material for lubricating matrices.

Wherever a linotype machine goes, Dixon's graphite follows. This is the case in Cuba where the linotype has been lately introduced.

GRAPHITE ON BOLTS AND TAPS

O. R. Klepinger, writing in *Power*, has the following to say concerning graphite as a handy aid.

If you strip bolts and taps in engineering work, just remember that graphite rubbed on the threads will save you the annoyance again, and graphite in gas engine packing work is almost a necessity, as packing on the hottest parts of the engine, when covered with graphite, will come away from the metal perfect.

PREVENTING CORROSION OF STEAM MACHINERY

By W. H. WAKEMAN.

Chapter XII.

Fig. 43 is an end view of a tubular boiler, showing the front of the bridgewall with the grates removed. A horizontal auxiliary attachment consisting of eight pipes, four inches in diameter, rests on the bridgewall, therefore as flames rise from the grates they envelope these pipes which extend the entire

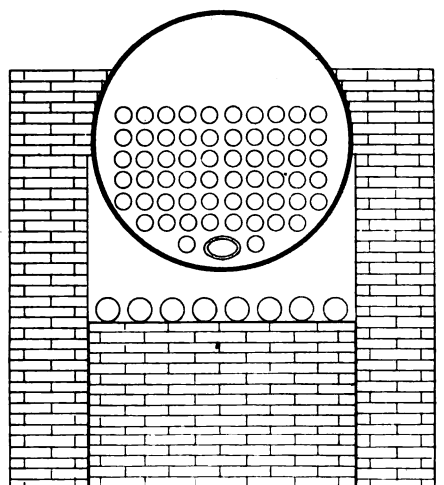


FIG 43.

length of the boiler. There was not too much room before between the grates and the shell for the combustion of soft coal, therefore when this addition was made it had the same effect as if the shell had been lowered, and that is a step in the wrong direction.

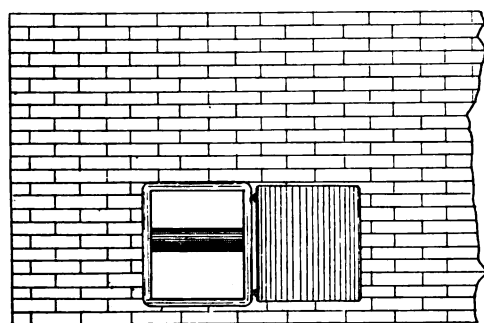


FIG 44.

Fig. 44 is a cleaning door in the side of this boiler setting, showing the pipes as they appear when the fireman opens the door to remove soot and ashes. This door was large enough to answer the purpose for which it was made, but there was no room to spare, and these pipes make it almost impossible for the work to be done, except by inserting a hoe, and that is very unsatisfactory. After this attachment had been used several years, the space above and below the pipes was almost filled with soot, ashes, broken bricks, and mortar, making it a "sight to behold." The need of frequent cleanings should be taken into account when installing a device of this kind, for if these are not possible loss of fuel will surely result, and expensive repairs may be caused by neglect. Some engineers

are not worried by such things, and unfavorable conditions prevent more competent men from doing as good work as they otherwise would.

Fig. 45 shows the front of this boiler with the upper doors removed. Two connections are made into the front head, the pipes from which pass through the dry sheet, as the front is of the half arch type, then are carried through the cast iron front. This makes it impossible to clean two tubes, and two others are partly covered, but it is possible to insert a steam pipe and blow soot out of them. Connections are made at the rear end to provide for rapid circulation of water.

The sole object in adopting this attachment was to enable two boilers to do the work that actually required three. The result may be summed up as follows: The efficiency of the furnace was impaired by bringing water tubes into direct contact with the fire before complete combustion could take place, therefore much black smoke resulted. It was practically impossible to clean the shell, and the pipes were soon rendered of little use by the accumulation of dirt. Four tubes were made nearly useless in addition to those removed to connect the pipes, thus reducing the heating surface about fifty per cent. of that gained by the added pipes.

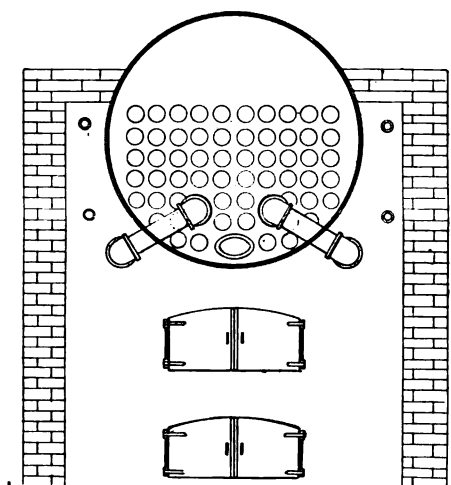


FIG 45.

These furnaces were fitted with stationary grates, therefore when it was necessary to clean the fires, much heat was lost because it takes twice as long to clean a fire with this kind of grates that is required when a good dumping grate is used, and if the grade of fuel burned admits of a shaking grate, the fire can be frequently cleaned in so short a time that it does not stop the formation of steam. These improvements add to the capacity of a boiler, by eliminating loss of evaporation due to dull fires during a portion of the time. There are few places where it is not possible to reduce the consumption of steam by improved methods of using it, hence this point should be investigated when it seems impossible to maintain the required pressure, in any case, and this plant was no exception to the general rule. However, the machinery was not controlled by practical men, but by those who were more competent to attend receptions, make speeches, reduce wages, and introduce abominable conditions, than to properly manage a steam plant, or to judge of the qualifications of other men along this line.

(To be Continued.)



DIXON'S PAINT ON THE BURLINGTON ELEVATOR

The grain elevator shown above is one of the large elevators at St. Louis, Mo.

Our readers who are users or specifiers of protective paints, will be interested in knowing the experience of one of our customers who has informed us that the paint used in 1902 for all iron work of this structure, has given far better service than was anticipated. After seven years' service, the paint is still in good condition and affording protection that is surprising. The use of our paint for the majority of the large western elevators and elevators along the Great Lakes, justifies the paint buyer in placing confidence in Dixon's Silica-Graphite Paint. Most of the large elevators along the waterfront are subjected to conditions of a severe character.

If you will address the Paint Department, Joseph Dixon Crucible Company, Jersey City, N. J., we will be very glad to tell you more about the practise followed in painting grain elevators with Dixon's Silica-Graphite Paint. Nearly every locality contains a reference.

A CAUTIOUS REPORT

"My boy," said the editor of the *Billville Bugle* to the new reporter, "you lack caution. You must learn not to state things as facts until they are proved facts—otherwise you are very apt to get us into libel suits. Do not say, 'The cashier stole the funds'; say 'The cashier who is alleged to have stolen the funds.' That's all now, and—ah—turn in a paragraph about that Social last night."

Owing to an influx of visitors it was late in the afternoon before the genial editor of the *Bugle* caught a glimpse of the great family daily. Half-way down the social column his eyes lit on the following cautious paragraph: "It is rumored that a card party was given last evening to a number of reputed

ladies of Billville district. Mrs. Smith, gossip says, was the hostess, and the festivities are reported to have continued until 10.30 in the evening. The reputed hostess insists that coffee and wafers alone were served as refreshments. Mrs. Smith claims to be the wife of John Smith, the so-called 'Honest Shoe Man,' of 315 East Street."

Shortly afterward a whirling mass claiming to be a reporter on the *Bugle* flew fifteen feet into the street and landed with what bystanders assert was a dull, sickening thud.

—*Weekly Telegraph.*

"GET BUSY"

Said one little chick with a funny little squirm,
 "I wish I could find a nice, fat worm."
 Said another little chick, with a queer little shrug,
 "I wish I could find a nice, fat bug."
 Said a third little chick, with a strange little squeal,
 "I wish I could find some nice, yellow meal."
 "Look here," said the mother, from the green garden patch,
 "If you want any breakfast, you must get up and scratch."

—*Bishop Press, of Kansas City, Mo.*

AUTO IMPORTS IN 1908

Some interesting statistics regarding the importation of automobiles through the New York Custom House, have just been made public. These figures refer to pleasure cars, and do not include taxicabs, of which several hundred of various makes were brought out. The records for the year 1908 show that 266 Renault cars were imported, the Fiats coming next with 181, followed by Mercedes, 94; Panhard, 72; Isotta, 40; Lancia, 27; Italia, 25; Hotchkiss, 22; Dietrich, 20; C. J. V., 18; Delauney-Belleville, 17; Rochet-Schneider, 11.

—*New York Times.*

REFLECTING EFFICIENCY OF COLORS

In the April issue of *Light* occurred an article by Mr. William J. Clark. The article gives the different light reflecting abilities of various colors. These facts, the writer points out, should be kept in mind when one is furnishing the home, as considerable difference in the light bills will be experienced with the different colors.

We quote:—

"It would hardly occur to the average home-maker or housekeeper that it costs more to live in rooms where the walls are covered with a dark green paper than it would were the wall papers of a light buff color, yet this is a fact, and it is one well worth the consideration of those who contemplate a change in wall coverings and hangings; in fact, both the color and the kind of surface chosen are important factors in the economy of light diffusion, and in these days of high power radiants, brilliantly lighted shops, shop windows and theaters, when there is a constant demand for more light everywhere, the problem of economical and useful light diffusion becomes an important matter, and one that should be universally considered, as there is no commodity bought or sold that enters more largely in the comfort of living than artificial light, nor, unfortunately, one of which the fundamental laws governing its advantageous distribution are so little understood.

"The intensity of the light diminishes in the ratio of the inverse square of the distance; that is to say, if at one foot from the light, the candle power is sixty, at the distance of two feet, or double the distance, the light intensity will be reduced to one-fourth of sixty C. P.; at three feet the light intensity will be reduced to one-ninth, and so on, of sixty C. P."

The table given below is taken directly from the article and shows what a wide range of reflecting efficiency exists between the different colors.

Kind.	Color.	Reflecting Efficiency.
Plain Ceiling	Faint gray cream .....	.64
"	" Faint greenish .....	.53
"	" Light yellow .....	.49
"	" Faint pinkish .....	.43
Cartridge	Medium light buff .....	.44
"	Salmon buff .....	.33
"	Pale gray .....	.27
"	Light blue .....	.20
"	Light green .....	.18
"	Light red .....	.10
"	Dull green .....	.07
Crépe	Medium green .....	.19
"	Coffee brown .....	.06
"	Deep red .....	.05

THE COST OF A PANAMA HAT

Panama hats are made in Colombia, Peru, and Ecuador, but never in Panama, says the *Scientific American*. The value of a Panama hat is chiefly the cost of the labor expended in making it, for the value of raw material never exceeds thirty-five cents, and averages less than thirteen cents. The labor is exceedingly cheap, but a great deal of it goes to the

making of a hat. It takes a man, working six hours a day, six or seven days to make a common hat, worth a dollar. Two weeks are required to make a hat of better grade, worth from \$1.25 to \$3, and six weeks to make a fine hat, worth \$20.

In making a fine Panama hat the straw is never dampened, and consequently the work can be done only when the air is very moist, that is to say, early in the morning, and in the evening. The straw used for cheap hats is kept wet, so that the work can be carried on during a greater number of hours per day.—*Marine Journal*.

TESTS OF DIXON'S AIR BRAKE GREASE

Sometime ago we sent a sample of Dixon's Graphite Air Brake and Triple Valve Grease to a road foreman of engines on one of the Western Railroads and received the following interesting letters.

Joseph Dixon Crucible Company,

Jersey City, N. J.

Yours of the 29th ult. at hand; relative to the tests I have made with the sample package of Dixon's Graphite Air Brake and Triple Valve Grease, I wish to say, "it does all it is paid to do."

While running engine No. 262, I had a squealing air pump—I overcame the trouble by using air brake and triple valve grease on the piston rod swab and in the air cylinder. I also used some of the sample on the brake valve and key gasket.

Owing to the limited amount of sample I was unable to make the tests that I wished to make; however, what little I had I put to a good use.

I would be very much pleased to see an article of such value on the market and adopted by our line.

Thanking you very much for the little sample package, I beg to remain,

Yours very truly,

Engineer.

Joseph Dixon Crucible Company,

Jersey City, N. J.

Yours of September 11th, '08, received, as was also the sample of your Air Brake and Triple Valve Grease.

I was unable to follow up the test personally and handed the sample to an engineer on my division who was complaining about his pump, etc., as you will see by his statement, attached.

Again referring to the statement of engineer ———, beg to advise that I have made Mr. ——— aware of the fact that this "article of such value is on the market" and is in use on the ———, even though not on my district, due to no fault of mine.

I have used your Air Brake and Triple Valve Grease with flattering results.

Please pardon my delay, as owing to dull business I had been assigned to other duties, but am now at the old post of duty.

Yours very truly,

— R. F. of Engs.

The Joseph Dixon Crucible Company will gladly send sample to anyone who wishes to make tests.

ROLL NECK LUBRICATION

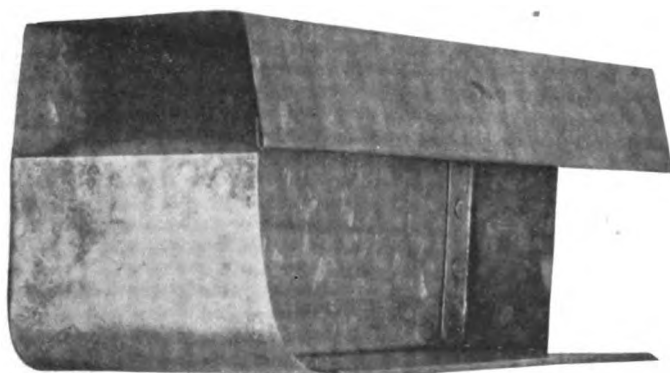
The lubrication of roll necks of steel rolling machinery doing exceedingly heavy work, heretofore has usually been done with suet, where it is obtainable, for the reason that it will take hold of the roll necks and leave a polish which is very much desired by every rolling mill superintendent.

The Dixon Waterproof Grease is coming to the front more and more every day because it will, even in the presence of water, take hold of the roll neck and stay on. Having a small percentage of Dixon's Flake Graphite included in the grease, this is deposited on the roll neck and produces that gloss which is so much wanted by rolling mill superintendents, and for that reason the grease used will be much more efficient.

It has heretofore been the custom in making grease for lubricating roll necks to have the same very stiff, and when we first interested the large steel mills in the use of Dixon's Waterproof Grease they asked if we could possibly make the same stiffer. We prevailed upon them, however, to test it out in its present consistency, because it would withstand the presence of water at high pressure and would take hold of the roll neck and give perfect lubrication, while it was feared that if something was added to make this grease of a heavier consistency, it would destroy this clinging quality which is so desirable to obtain results.

There are structural mills, rail mills and rod mills, on which a great deal of water at high pressure is used to keep the necks cool. This water washes off the grease commonly used in lieu of suet.

It is very necessary in structural steel mills and rail mills that there be not the slightest variation, even the hundredth part of an inch, and for that reason it is necessary that the



shoulder bearings fit very rigidly. The pressure existing between the brasses and the shoulder is enormous and if the lubrication is not perfect the friction will cause heat sufficient to run the babbitt. In that case the slight variation would cause a fin to be left on the piece of steel and of course that would necessarily scrap the piece. It has been proven that the Dixon Waterproof Grease lubricates the shoulder perfectly and does not allow the babbitt to become overheated and run.

In some places where Dixon's Waterproof Grease has been used they have made a galvanized iron box for holding the grease, thus effecting a saving of the waste which naturally occurs when it is placed in the open box. This box is so made that the grease can be placed in at the ends of the same and will then reach the roll neck and shoulder through openings

left at the proper places. Of course, in the construction of these boxes they must be specially built for each bearing.

Some inconvenience was first experienced in the use of Dixon's Waterproof Grease, inasmuch as it is of very sticky, clinging consistency and clings to everything it touches, and one man, who had great difficulty in handling the same,



finally discovered that by the use of wooden paddles, dipping them from time to time in kerosene, this grease could be very easily handled and would not stick to the paddles. Those now using this plan experience very little difficulty in handling.

We are given to understand that exact figures as to comparative cost of lubrication cannot be obtained except through general superintendents of different plants, and we would be pleased to direct those interested into the right channel to ascertain exact figures from the steel companies who have used Dixon's Waterproof Grease.

THE LIGHT THAT FAILED

The bachelor and the Benedict were wending homeward their weary way.

"Ah, you lucky married man," sighed the bachelor. "Think of having a hearthstone, a real home, a waiting welcome! Look—there is a light in the window for you!"

"Gee! So there is!" muttered the Benedict. "Well, there's only one way out of that—let's go back to the club."

—*Home Herald*.

DON'T wait till the day of trouble comes. Examine your tires. Rub the wheel rims with Dixon's Motor Graphite. Rub it in well; it prevents rust and sticking of tire. Rub some graphite on threads of lugs.

Joseph Dixon Crucible Co.,
Jersey City, N. J.



THIRTY YEARS' SERVICE FOR DIXON'S PAINT

The accompanying cut shows a cottage located at Hague, N. Y., on which Dixon's Silica-Graphite Paint has given a service of thirty years. The letter reproduced below vouches for the authenticity of this service. To drop into the vernacular, this is certainly "going some."

HAGUE, N. Y., February 27, 1909.

Joseph Dixon Crucible Company,
Jersey City, N. J.

GENTLEMEN:—

To my knowledge, the building, located in the town of Hague, which the enclosed photograph represents, has not been painted for at least twenty-three years, and I am inclined to think that about thirty years have elapsed since the last painting, when the Dixon's Silica-Graphite Paint was used.

The paint is still offering excellent protection and looks as well as most coatings appear after three or four year's service. The wonderful durability of Dixon's Silica-Graphite Paint has certainly been strikingly illustrated in this instance.

Very truly yours,

THOS. LONERGAN.

ABOU BEN-ZOATE

About Ben-Zoate (may his tribe decrease),
Awoke one night amid the graft and grease,
And saw within the factory's deep gloom
A demon writing in the book of doom.

Exceeding nerve Ben-Zoate now possesses
And thus the sooty visitor address:
"What writest thou?" The demon raised his head,
Saying with shrewd look from his thievish eyes,
"The names of them who love the Prince of Lies."

"And is mine there?" quoth Abou. "Nay," he said,
"But I shall write whate'er thou wilt instead."
And Abou sweetly said: "I am content;
Write me, I pray, 'One-tenth of one percent.'"

The demon wrote and went, but the next night
He came again, and by a flickering light,
He showed their names that met the devil's test;
And, lo, Ben-Zoate's name led all the rest.

—*Indianapolis News.*

STOP LOOK LISTEN



Increased lubricating efficiency—that's what we want you to stop a moment to consider. And it's a mighty vital thing, this problem of lubrication. Just how vital you realize when you remember that an engine couldn't run without it. Now

Dixon's Flake Graphite

has some properties that no other lubricant of equal value possesses. Flake Graphite is a solid, it is not subject to heat or cold, will withstand the greatest pressures, and is unaffected by acids or alkalies. Do you know of any oil or grease that will stand such tests?

Write for our little booklet on Dixon's Ticonderoga Flake Graphite—sent to you free.



HOW DIXON'S PENCILS ARE MADE

Familiarity breeds contempt. The lead pencil is an almost indispensable, though common article of daily use, and for this reason, no doubt, most of us fail to realize the time, skill, and care necessary in its manufacture. The best Dixon pencils are months in the making, the raw material used comes from various parts of the world and before the finished product is produced it goes through thirty operations.

The manufacture of pencils naturally divides itself into two parts: the preparation of the lead, and the working of the wood both before and after it is combined with the lead. The term "lead," by the way, is a misnomer, since graphite and clay form the writing material in the pencil. But "lead pencils" is the accepted name and does as well as any other though it has no logical formation.

way, the more thorough becomes the incorporation of the graphite and clay one with the other, which insures smoothness and strength in the finished lead. In the last press, the dough mixture is forced through a single jewelled hole just the diameter desired for the lead. A jewel must be used to withstand the enormous pressure, and to ensure smoothness and fine finish of the lead. After being dried out and cut into proper pencil lengths, the leads are put in graphite baking boxes, and baked in an oil furnace where the temperature runs over 2000 degrees Fahr. This completes the preparation of the lead.

What is known as the Dixon Pencil Factory proper is a separate building and contains over 100,000 square feet of floor space. Here the cedar (direct from the Dixon groves in Florida) is sorted into grades. Fig. 1 shows the shape in

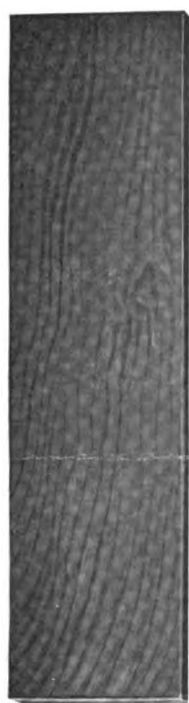


FIG. 1.

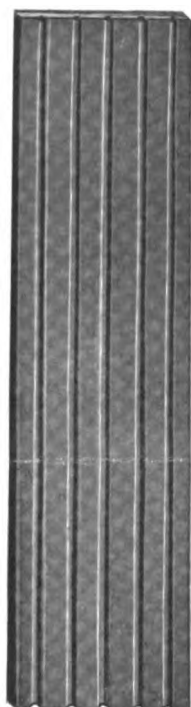


FIG. 2.

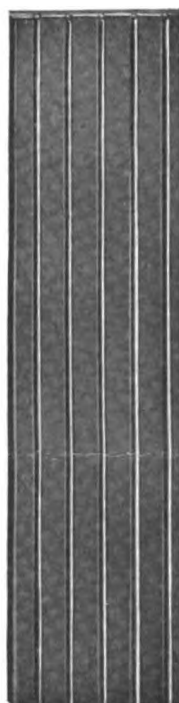


FIG. 3.

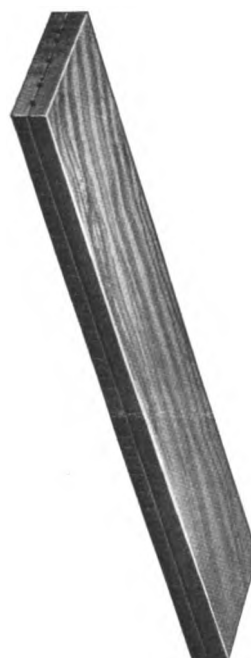


FIG. 4.

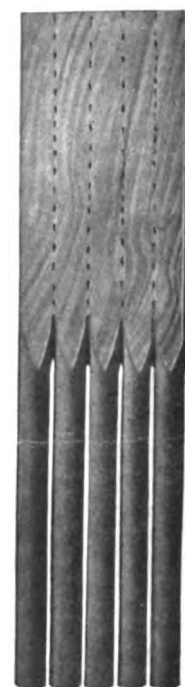


FIG. 5.



FIG. 6.

The graphite actually makes the mark. The clay has value only as a binder and to assist in grading the pencils from soft to hard—more clay and less graphite means hard pencils, and less clay and more graphite means soft pencils.

Both the graphite and the clay go through washing processes before being combined, after which they are ground together between millstones, having been first mixed in the proper proportions for the grade desired. It will be readily appreciated that uniformity in grade of hardness requires knowledge and experience on the part of the pencil maker. Not only must the proper proportions be known and accurately combined, but the effect of subsequent baking must be taken into account.

The grinding of the mixed graphite and clay goes on for weeks in preparing the lead for the best pencils. After grinding, the mixture, about the consistency of dough, is worked and kneaded—put through hydraulic presses that force it out in strings, then it is restored to a mass form again, and the operations repeated. The longer the lead is worked in this

which the cedar slats arrive at the Jersey City factory. These slats, after grading, are "boiled" in steam to remove the sap, then dried in steam drying rooms.

Then the next step is grooving and gives the results shown by Fig. 2. Now the wood is ready to receive the leads which are placed between two slats, sandwich fashion, glued, put in forms that hold them over night under a thousand pounds pressure. Fig. 3 shows the leads laid in one of the grooved slats.

Fig. 4 shows a perspective view of the block as it appears when taken out of the form. The leads can be seen in the end. These blocks are fed to machines which cut out the pencils in one operation. An idea of this operation is given by Fig. 5 which shows a block half cut through. The pencils come out quite smooth but are sandpapered to a finer finish before receiving the finishing coats. The more expensive pencils are given a number of coats of varnish before being passed along for the next process.

Genuine gold leaf is used for the stamp on the best Dixon

pencils. This leaf is cut and laid on by skilled workwomen, and stamped into the wood by a die. Fig. 6 shows the pencil in its finished state, varnished and stamped.

Of course, an article of this kind can only roughly outline the process of pencil manufacture. Some of the intermediate steps have not been described, and pencils containing rubbers and those with special finishes naturally require extra handling. Enough has been told, however, to give a good general idea of the manufacture to show the possibilities in the making of pencils, and to indicate that a wide difference in pencil quality may exist.

As is the case with practically every product, quality of the raw materials and the skill and time devoted to their manufacture determine the quality of the finished pencil. The Dixon Pencil Plant is fully equipped with modern machinery and the company largely control their raw material. As makers of pencils the Dixon Company feel that they need not take second rank to any concern in the world.

SOME PRACTICAL EXPERIENCES WITH GRAPHITE

Editor Graphite, Jersey City, N. J.

I have used graphite for many years with good results, and have seen some remarkable evidence of its lubricating and "staying" qualities. At one time it was a part of my duty to ring the "time" bell for a manufacturing plant which covered several acres of ground and employed some hundreds of men; this bell was placed high above the tallest structure on the place and the rope was lead over guide sheaves to the most convenient point of access on engine room floor. I was much annoyed by the frequent necessity of replacing the bell rope on account of its failure due to friction of sheaves and other points of contact, so when placing a new rope I first gave it a thorough application of "flake graphite" mixed to the consistency of paint and put on with a paint brush. I rang this bell—which was of good size, being an old steam-boat bell—six times per day and pulled the rope eighteen times at each ringing. Before using the "graphite," new ropes were placed frequently. I rang that bell four years after placing the "doped" rope, and it was yet in service when I left. At this same place a pneumatic yard crane was used for loading and unloading car wheels and axles, and a chain was used for the hoist. This crane was in use almost constantly and a chain would wear down to the danger point in three month. I induced the man who had charge of it to try the experiment of slushing the hoisting chain with the graphite and oil, and the result was that one chain was used two years and was not then worn to danger point or near it. I have other interesting experiences with graphite but probably this is enough for one time.

Yours truly,

M. E. COPLEY, Engineer.

LITTLE Dorothy had been intently watching her brother, an amateur artist, blocking out a landscape in his sketch-book. Suddenly she exclaimed: "I know what drawing is."

"Well, Dot, what is it?"

"Drawing is thinking, and then marking around the think."

DIXON's graphite publications sent free upon request.

JUST A MINUTE FOR VERSES AND HUMOR

Written for the Post-Dispatch by Clark McAdams

IN MISSOURI

Somebody is born every two minutes.
A country goes dry every three weeks.
There is a wedding every seven minutes.
Somebody is found out every fifth of a second.
A divorce is granted every seventeen minutes.
Somebody is kicked by a mule every four hours.
There is a Democrat born every fourteen years.
A trust is busted every fifteen thousand years.
There is a Republican born every five minutes.
There is a saloon voted out every three minutes.
A train jumps the track every fifty-four minutes.
Somebody joins the Navy every nineteen minutes.
The oldest native of the State dies every five days.
A boy leaves the farm every twelve seconds.
Somebody joins the Army every twenty-three years.
Somebody buys a gold brick every forty-five seconds.
A family moves to Oklahoma every nineteen minutes.
Somebody moves back from Kansas every sixteen minutes.
Somebody gets stung in a horse trade every eight minutes.
Somebody gets off a street car backwards every ten seconds.
Somebody joins the Anti-Saloon League every fifth of a second.
A ton of straight-along cornbread is eaten every thirty-eight minutes.
A case of beer is shipped into a temperance town every two seconds.
Somebody tries to mail a letter in a firealarm box every fifty-nine seconds.
Somebody is killed by a gun he didn't know was loaded every twenty-eight minutes.
A man who wouldn't shave until Bryan is elected is suffocated by his whiskers every five days.

—*St. Louis Post-Dispatch.*

SIGNIFICANT

A supply house of five men was formed not long ago in a city of the Middle West, comprising two engineers, one foundry foreman, one who had had experience in steam heating lines, and the fifth a supply house man. In stocking up their supply house, one of their first cares was to order three cases of Dixon's Flake Graphite. It is to be borne in mind that these men have all had experience, either with the selling end of supply house work or with the buying end as supply house customers. They evidently appreciated not only the high value of Dixon's Flake Graphite but also the fact that it was a necessary and desirable article to stock.

Is this significant?

IN TRANSIT

Hello! What place is this, I wonder? Life?

A pleasant place! Such fun! Such blundering strife!

How swift the pace! I'm almost out of breath!

Hello! What place is this, I wonder? Death!

—GEORGE RANDOLPH CHESTER in *Munsey's*.

"NOTHING AS GOOD AS DIXON'S ANGLO-SAXON"

Our School Department recently received the letter which we reproduce below. In this connection we might say that we are especially proud of Dixon's Anglo-Saxon.

AMES, IOWA, March 13th, 1909.

GENTLEMEN:—

While serving on the Board of Education of the city of Des Moines for a number of years, your representative favored me each year with a supply of your "Anglo-Saxon No. 2—No. 1802" pencils. He spoiled me from using anything else. I have been unable to get this pencil in the market either here or in Des Moines. Have sent orders to wholesale houses three times and each time the order was filled with "Something just as good." There is nothing as good. I want a gross or two of these and do not know of any other way to get them than to write direct to headquarters.

"THE WORLD DO MOVE"

Twenty-five years ago you could not telephone a friend.
Ride on the trolley cars.
Cool the rooms in hot weather with an electric fan.
Turn on the common electric light.
Send a wireless message to your relatives on shipboard.
Set your watch by an electric clock.
Purchase an electric automobile.
Walk in safety in the city streets in the glare of arc lamps.
Cook by electricity.
Ride behind an electric locomotive.
Do the family ironing out of doors without fire.
Drive all machinery with motors.
Live in a house without a chimney.
Keep warm by electric heat.
Develop out-of-the-way water power and transmit that power to the cities.
Ride on an electric elevator.
Listen to the telharmonium.
Take an electric message or listen to an electric phonograph.—*The Office Digest.*

JOLIET, ILL.

Joseph Dixon Crucible Company,
Jersey City, N. J.

GENTLEMEN:—

I wish to acknowledge the receipt of the book "Graphite as a Lubricant," and thank you for the same. I have been buying graphite out of my own pocket for use on the gas engine which runs our plant, but I induced the superintendent to read some pertinent paragraphs in the book, and the company is going to furnish the graphite after this.

I am much interested in graphite as applied to gas engines and automobiles, and I wish you would send me a copy of your booklet on automobile lubricants.

Very truly yours,

It is not absolutely necessary, but it is well to take the springs apart. Sandpaper any rust between the leaves, and paint between the leaves with graphite grease. After this there will be no trouble with squeaking springs.—*Collier's.*

WHAT THE SCIENTIFIC AMERICAN SAYS ABOUT GRAPHITE LUBRICATION

Graphite is one of the best lubricants known and can be used in most parts of the car, added to the oil, which then carries it to the bearing proper. Mixed with grease, forming a heavy paste, it has been used successfully in slow-running journals, transmissions, or wherever very heavy surface pressures exist, or wherever oil does not permanently identify itself either with the journal or bearing but forms an intermediate film only, depending on the pressure transmitted and the viscosity.

Graphite forms hardly any film between rubbing surfaces, but associates itself with either one or the other or both working parts. It acts like a filler or veneer, and is of great value when used on poorly surfaced machine-parts. It is marketed in two forms—amorphous (or powdered) and "flake"—and in connection with cup grease, universal-joint and gear-case compounds, good for chains and fiber cam-shaft gears. Mixed with quickly-drying shellac, it forms a rust-proof coating for rims. Threaded connections treated with a mixture of graphite and oil will form tight joints, but can nevertheless be easily removed.

The following references to the use of graphite also occurred under a table entitled:

LUBRICATION—HOW MUCH AND HOW OFTEN.

Part.	Lubricant.	Quantity.
Front and rear wheel hubs, plain bearing.	Graphite and oil	500 miles.
Leather boots of steer-rod joints and steer drag-rod joints.	Grease	Monthly or 500 miles.
Transmission-casesliding gear system	Gear case compound or heavy oils, or either mixed with about ten per cent of graphite.	Semi-Monthly or 300 miles. Let gears dip.
Transmission case individual clutch type	Light motor oil and little graphite	Every 300 miles.
Planetary transmissions	Non-fluid oil, or oil and graphite.	Every 300 miles. Fill up no higher than shaft bearing.
Timing gears	Non-fluid oil, graphite if exposed.	Monthly.
Chains	Chain graphite	Twice a year boil in graphite and grease after washing well in kerosene.
Clutch multiple disk, steel on steel.	Spindle oil and kerosene, kerosene and little graphite.	Weekly.
Clutch multiple disk, leather on steel.	No oil, little graphite.	Weekly.

I wrote down my troubles every day;
And after a few short years,
When I turned to the heartaches passed away,
I read them with smiles, not tears.

—JOHN BOYLE O'REILLY in *Success*.



FRIENDSHIP DINNER

With an "Auf Wiedersehn," and an "Au revoir," and an "Hasta la vista," and a "See you later," a score or more of the Dixon staff gave a send-off dinner to Mr. F. Engelbrecht, at the Union League Club, Jersey City, April 16th.

Those who have had the privilege and pleasure of attending a Dixon dinner need no description; those who have not attended, cannot know how keenly the Dixon boys enjoy themselves, and mingle in brotherly sympathy and companionship, unless it is their good fortune sometime to be there. Suffice it to say that "Fritz" had a fine send-off.

Mr. Engelbrecht sailed on April 20th, accompanied by his wife. He goes to Europe in the interest of the Dixon Company, and for a vacation as well.

WHEN EXPLOSIVES EXPLODE

A popular notion that explosives will "go off" by any simple method is wrong. Many of the most powerful explosives imaginable may be kicked about, may be set on fire or may be shot out of a gun, and unless the proper agency for exploding them is employed they will not "go off," and will do no damage. The reason for this may be explained by an illustration. Consider a grate full of coal. There is there enough of what we may call explosive energy to throw a thousand pound weight through a foot of solid steel—if only it could be liberated. But there can be no explosion without oxygen, and the coal in the grate will not burn faster than the supply of oxygen in the air which reaches it will permit. If the coal could be furnished all at once with enough air to cause its complete burning, it would explode with as great violence as if it were so much dynamite.—*St. Nicholas*.

SABINE, Texas, July 30, 1908.

Joseph Dixon Crucible Company,
Jersey City, N. J.

DEAR SIRS:—

I have used your Graphite Pipe Joint Compound in installing gasoline engines, and for the gasoline supply pipes, cooling water and exhaust pipes I find it superior to anything else I have ever tried.

Yours very truly,

C. E.

Productions of the Dixon Crucible Co.

Dixon's Black-lead Crucibles and Retorts, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

Dixon's Brazing Crucibles, made in several shapes for dip-brazing.

Dixon's Graphite Boxes and Covers, for baking carbons and filaments for electric lighting.

Dixon's Fine Office and Drawing Pencils, unequalled for smooth, tough leads and uniformity of grading.

Dixon's Colored Crayons, in wood or solid. For schools, railroads, editors or factory.

Dixon's Lumber Leads, black or colors; for green or dry lumber.

Dixon's Metal Workers' Crayons.

Dixon's Felt Erasive Rubber, for erasing pencil marks, type-writer work or ink.

Dixon's Carburet of Iron Stove Polish, the old reliable; in cake.

Dixon's Pure Flake Lubricating Graphite, a solid lubricant for all frictional surfaces.

Dixon's Special Graphite No. 635, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

Dixon's Electrotyping Graphite, used by the majority of practical electrotypers of this country.

Dixon's Hatter's Lead, for coloring hat bodies.

Dixon's Plumbago for Shot Polishing.

Dixon's Plumbago for Powder Glazing.

Dixon's Plumbago Foundry Facings.

Dixon's Yacht Plumbago, for lubricating and smoothing bottoms of yachts.

Dixon's Graphite Waterproof Grease, for gears, wire ropes, hoisting chains and general machinery.

Dixon's Graphite Axle Grease, for trucks, wagons, carriages.

Dixon's Graphited Wood Grease, for use on trolley car gears which are enclosed in a gear case.

Dixon's Graphited Oil, for use in all places where the use of a gear grease is impracticable.

Dixon's Graphite Cup Greases, for use in cups or open bearings, on spindles, shafting, etc.

Dixon's Oiled Graphite,

Dixon's Lubricating Compound No. 688, for enclosed gears of electric automobiles.

Dixon's Silica-Graphite Paint, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

Dixon's Graphite Pipe-Joint Compound, for steam, gas and water piping, smearing gaskets and flanges.

Dixon's Automobile and Bicycle Lubricants.

Dixon's Graphitoleo, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

Dixon's Commutator Graphite, will glaze commutator with the finish so much desired by electrical engineers.

Dixon's Graphite for Type Setting Machines.

Dixon's Graphite for Talking Machines.

Dixon's Motor Chain Compound, for transmission chains.

Dixon's Crucible Clay and Graphite Mixture, for lining and repairing fire boxes.

Dixon's Stove Cement, for repairing stove or range lining.

Dixon's Traction Belt Dressing, for leather belts.

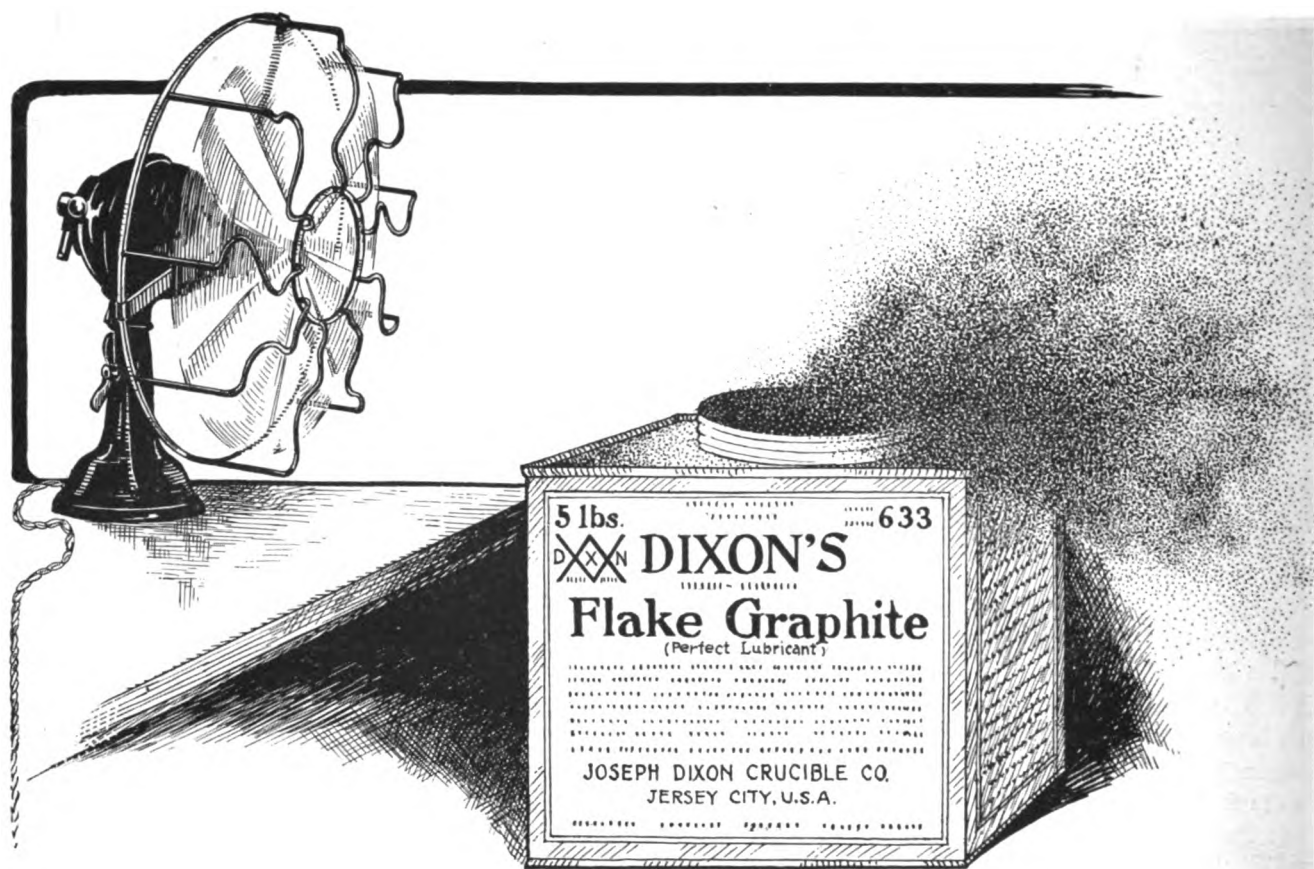
Dixon's Solid Belt Dressing, convenient for those who prefer a solid dressing.

Dixon's Graphite Resistance Rods, from one-eighth to one inch diameter; any resistance required.

Dixon's Graphite Brushes, for motors, dynamos and generators.

Dixon's Graphite Products for Electricians.

Special circulars with detailed information sent on request.



Keeps Bearings Cool

The sizzling hot days are almost upon us. And hot bearings are apt to come right along with the hot days. It's best not to take chances anyway, since there is one absolutely sure way to avoid overheated bearings and friction troubles of all kinds. Keep a can of

Dixon's Flake Graphite

handy and use a little now and then with the oil. Flake graphite doesn't mind the heat, you can set a can of it on a red hot stove and the graphite remains unaltered. It's a good conductor of heat too. But most important of all, Dixon's Flake Graphite goes right to the source of friction, microscopic roughness in metal surfaces, and puts a smooth, tough graphitic coating on the metal—this saves wear, power and the engineer's troubles. Write for free sample.

Joseph Dixon Crucible Company, Jersey City, N. J.

GRAPHITE

VOL. XI.

JUNE, 1909.

No. 6.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

COPYRIGHT, 1909, BY JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

FORESIGHT AND AFT

How simple and easy it is for us to look back on a past experience in which some failure occurred and explain the cause of the failure. Also, perhaps, we may be able to point out how the failure might have been avoided.

This is brought to mind by the interesting article which appeared in *Collier's*, written by James B. Connolly, a representative of *Collier's*, who was on the "Republic" when she collided with the "Florida." The writer criticised various matters in connection with the accident and the subsequent relief. The possibilities resulting from the rule compelling officers to refrain from giving passengers information were brought out. An officer, on being asked in which direction was

the nearest land, answered, "I am not allowed to tell." The writer pointed out that had one of the open boats become separated from the ships in the darkness, nobody would have known in what direction to pull for shore.

When the "Baltic" came up, everyone expected that the passengers who had been taken from the "Republic" to the "Florida" would be immediately transferred to the "Baltic," but it seems that this was not to be. She first devoted her attention to the "Republic," her company's property. It is alleged that at this time the sea was smooth, the air dry and the night comparatively bright. Passengers were not taken off, however, until some five or six hours later, and then the "Baltic" did not begin the rescue work herself, though it would seem that her larger boats and fresher crews could have done the work with greater ease and speed.

The statement is also made that neither the "Republic" nor the "Baltic" carried half enough boats or life rafts for the full passenger list.

These criticisms, no doubt, are largely just, at least they sound reasonable, but the principle that impresses us is the ease with which one is able to theorize and criticize, and the difficulty that accompanies real accomplishment. After some failure or hitch has occurred in any undertaking, you can get any amount of people to point out the trouble, but how few could have told you about it beforehand, or perhaps even carried the work through as well as it was accomplished.

And again, we desire to emphasize the fact that this is no

criticism of the writer of *Collier's* article, for as near as we understand the conditions, we agree with what Mr. Connolly said—which only goes to prove what we were contending, the ease with which we all can criticise.

COMMUTATOR TROUBLE

A commutator trouble may be caused by a number of things, among which are the following: Brush position; running as it does with a weaker field than that for which the machine was designed, the brushes will probably need a greater forward lead than at normal voltage. Brush spacing; if the several sets of brushes are not spaced equally around the commutator, sparking will occur; this spacing can best be checked by aid of a strip of paper of a length equal to the commutator circumference, on which have been marked off as many equal divisions as there are brush-holder studs; the paper should be pasted to the commutator and each stud set so that the toe of the brush will come to the mark; care should be taken that the brushes all lie in line with the commutator bars. Tight brushes; every brush should be gone over to see that it fits sufficiently loose in its holder to allow the spring to press it against the commutator; dark streaks are often caused by tight brushes; on the other hand, a brush that fits too loosely in its holder will also cause trouble. Brush contact; too much care cannot be taken in sanding the brushes; a coarse paper may first be used, but the finishing touches should always be done with a very fine grade, the brush being under the tension of the spring only; smoothing should always be done in the direction of rotation. Metal bridges; after smoothing or turning off the commutator, it should be carefully examined for copper bridges across the mica strips between the bars; if these exist they should be removed; a knife blade will usually accomplish this very successfully.

If there are no errors in the design of the machine, a rigid application of the foregoing hints should produce better commutation.—EDWARD CHENEY in *Power*.

There are many cases on record where Dixon's Graphite Brushes have afforded the proper relief from troubles. Are you interested? If so, write us.

THE SHADOW OF COMING EVENTS

"You look so pale and thin. What's got you?"

"Work. From morning to night and only a one-hour rest."

"How long have you been at it?"

"I begin to-morrow."—ANNA DOUBLIS in *Success*.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

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Treasurer—GEORGE E. LONG
Secretary—HARRY DAILEY

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BALTIMORE OFFICE, 1005 Union Trust Building.

WORDS OF ENCOURAGEMENT

In our April issue, we appealed to our readers for opinions concerning the value of house organs in general and GRAPHITE in particular. We requested straight-from-the-shoulder opinions regardless of whether these were favorable or otherwise.

We would like to have had a larger expression of opinion, but this absence of quantity is more than compensated for by quality, and further by the fact that not one single adverse opinion was received. In view of the fact that we made it easy for anyone to express an unfavorable opinion, and in view of the further fact that it is usually a simple matter to get unfavorable comment on almost any proposition, we feel that the absence of even one such opinion is significant of the position that GRAPHITE holds. We quote from a few of the letters received.

The following is from a master mechanic who took the trouble to write us personally. The writer is obviously free from bias for or against the house organ.

"I receive a number of house organs and value them highly for the amount of information they contain. I never thought of comparing them with the trade paper, the conditions being so entirely dissimilar, they are incomparable in any sense of the word. There is no sort of doubt that each has a field of usefulness of its own."

A city engineer from a Western town writes us:

"In response to your request to your readers to say whether or not they liked the visits of GRAPHITE, I take pleasure in saying that there is nothing that visits my office in the way of reading matter that I enjoy for a while more than GRAPHITE. I get tired of the dull routine of scientific journals and turn with relief to lighter matter."

The article from April GRAPHITE, as some of our readers may remember, was inspired by the caustic comment of one of the trade journals on house organs. Our article was a plea for the defendant, and the jury was GRAPHITE readers. We have no quarrel with the trade paper, since we believe that it is valuable and necessary; our sincerity is proven by the fact that we spend thousands of dollars in the trade and technical press every year. The comparison between the house organ and the trade journal was not our own making. We quote from a Western engineer who writes as follows:

"With reference to house organs and trade journals, would say that I subscribe and pay for some five technical papers and have done so ever since they were first started, but at the same time have received a lot of valuable information from GRAPHITE and some five or six other papers. I have used a large quantity of graphite in my life (formally called 'black lead') when I was a boy in the foundry, and it has no equal as a lubricant."

Since we are on the subject, it would perhaps be well for us to say that while we firmly believe in the well prepared house organ, we also believe in making it distinctly an organ for the house issuing it. Therefore, GRAPHITE does not solicit advertising nor carry any other than Dixon's.

We will close the case with a heart-to-heart letter from the engineer of one of the big flour milling companies:

"In the current number of GRAPHITE—page 1086, appears an article entitled 'What is Your Opinion,' which invites frank and fearless expression of ideas relating to the house organ, which I rise to remark and will try to make my language plain, that there are house organs and house organs; the literature that is inflicted upon the human family by a patent medicine company, is a *house organ*, but does not appeal to me at all; and yet every issue of GRAPHITE is a most welcome visitor and occupies a place on my desk with my trade journals. Why is this? Because after many years of experience, I have found graphite to be so valuable to me in the engine room, that I am *never* without it; and, while I had used it a long time before you began the publication of GRAPHITE and more than once had demonstrated its ability to reduce friction where oil was helpless to do so alone, and supposed that I knew all that was necessary to be known of its virtues, yet I have learned a great deal more of its great value by reading your admirable little journal. So I am willing to give it a place for ready reference and would sadly miss its monthly visits."

EXPERIENCE

By H. S. SNYDER.

How valuable would your services be without your experience? If what you had learned in, say, the last ten years were taken from you, would you not seriously feel the loss?

Your practical experience, then, represents your value to others. It is what you know and your ability to adapt your knowledge to your work that makes your work efficient.

Suppose it were possible for you to have eighty years of experience, not merely to *live* eighty years but to have eighty prime years in which to study, absorb and practise. Can you realize how much this would mean to you? Think how much you would *lose* if the ten best years of your life with the practical knowledge you have gained during these years, were taken from you. Then you will appreciate how much you would *gain* if these ten best years with the accompanying practical knowledge were multiplied eight times. You would be almost beyond competition—where others would have to *think or try*, you would *know* and could *perform*.

This quite closely represents the position of the Joseph Dixon Crucible Company. Founded in 1827, this company has continued to deal in graphite for over eighty years, always learning, always improving; perfecting its knowledge, its facilities, its methods. To appreciate what this means, as we have tried to point out here, it is only necessary for you to realize what your experience has meant to you.

There are one or two advantages however, that a company's experience has over that of an individual. It has in the first place the benefit of "many heads." And we all know the bromidism, "nothing succeeds like success"; but it is as true as it is hackneyed, and means in our own case that everything concerning the graphite industry is usually brought to our attention first, and an opportunity given us to take such action as we may deem advisable concerning it.

As far as we know, there is no substitute that can take the place of experience. It is a school that gives you a post graduate course in hard knocks and cold facts. We have been attending it over eighty years and we are still going.

FRICITION AS A CAUSE OF FIRE

We note an advertisement of a fire extinguisher company, in which are given causes of fires in what is stated to be their order of importance, as developed from statistics. This gives "friction in machinery" as fifteenth on the list, placing it ahead of fires caused by engines and boilers.

There is no necessity for taking this fire risk. By the use of Dixon's Flake Graphite the quantity of oil used may be reduced to a minimum. Flake graphite will keep down the friction and unlike oil will not add to the flames or assist in combustion, should the fire get started in any way whatever. The value of Dixon's Flake Graphite as a safeguard and insurance represents a return of hundreds of dollars, and the premium is low out of all proportion.

THE application of graphite to main and big-end bearings after scraping in has a beneficial effect, and prevents the heating which often occurs with a new bearing.—*Automobile Topics*.



Old-Timer Talks No. 1

Now it's possible to avoid all hot crank pins or bearings, groaning cylinders, troublesome valves, and the like. It's just a simple matter of treatment.

Where there's a groaning or squealing or heating-up, you can know for certain that the treatment ain't right. Bearings and pins always behave if you feed 'em as you should. Add a little of Dixon's Flake Graphite to the oil and see how the hot bearings or pins cool off, every time.

And you can't fool 'em with "just as good" graphite either—it's Dixon's they want.

Course, by using Dixon's Flake Graphite regularly, you can leave friction troubles for the other fellow.

My advice is to write the Dixon people for free sample can.

Joseph Dixon Crucible Co.
Jersey City, N. J.



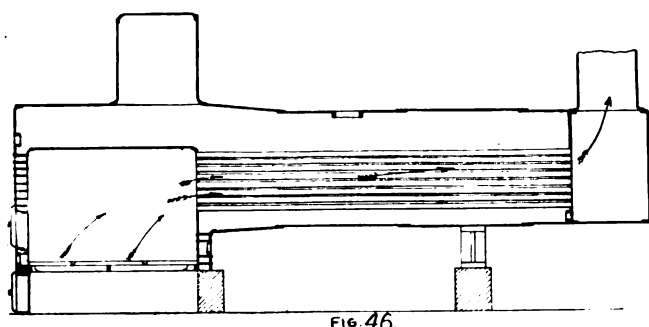
PREVENTION OF CORROSION OF STEAM MACHINERY

By W. H. WAKEMAN

Chapter X

It is next in order to consider horizontal boilers (and those that are inclined at a slight angle) which are fitted with fire tubes, but owing to their design and construction they do not require a brick setting, or in other words they are of the internal fired type, consequently the shell is not exposed to the direct action of heat generated in the furnace. A boiler of this type is set on a foundation of greater or less stability, according to the requirements of the case in hand and the business ability of the owner, after which the external surface is covered with a good non-conductor of heat, provided the conditions under which it is operated call for expensive fuel, or left exposed if fuel is cheap, or if the owner is ignorant of the elementary principles of steam engineering.

Fig. 46 illustrates a very familiar specimen of this type, known as the locomotive boiler, although the name does not necessarily signify that the boiler was ever mounted on wheels of any kind. When such a boiler is viewed by a possible purchaser, one of the points in its favor that is made very prominent, is the fact that a brick setting is not necessary, making the first cost less and eliminating repairs along this line. These are what salesmen call "good talking points," but the net benefits secured are not as great as advance figures seem to indicate.



A common tubular boiler requires an expensive setting, but the total bill of expense may not be much less for a locomotive boiler with the same number of square feet of heating surface, because the boiler itself will cost more than a return tubular, after which it must be covered with something that will effectually prevent radiation of heat. These two items will make the cost at least nearly equal that of the brick set boiler.

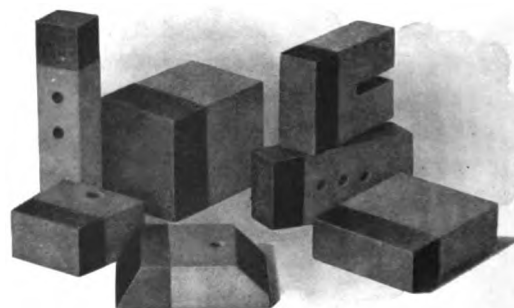
A point in favor of the locomotive (or any other internally fired boiler), is that the fire is surrounded by heat absorbing parts of the steam generator, while with a fire that is kept in place by brick walls, there is chance for much heat to be lost by being taken up by these walls. On the other hand, what becomes of the heat that is absorbed by these bricks? The walls are so thick that not much of it escapes through them, therefore it is simply stored there to be given out again and taken up by the boiler when conditions are right for it.

For illustration of this action it is not necessary to go beyond my own experience in the matter, although it has doubt-

less been duplicated many times in other cases. A plant that I formerly had charge of, was shut down at five o'clock on Saturday afternoon and started at six o'clock on Monday morning, or at least the fire was started at that time. As shavings were used for fuel, there was no fire left in the furnace a few minutes after the engine was shut down, yet there was steam pressure on the boiler when a fire was started on Monday morning. It is quite evident that the heat required to keep even a light pressure on for thirty-seven hours, must have been radiated back from the brick work. If a boiler is not set in masonry, or thoroughly covered with a good non-conductor of heat, steam will go down to zero in a few hours after the fire goes out.

The flat crown sheet of this boiler is always a weak place which must be supported by braces attached to the shell, or by heavy crown bars that extend entirely across its surface. Without these this important part would collapse under a very light pressure, depending on the thickness of material and the surface exposed to pressure. It is necessary to keep this sheet free from scale as it is exposed to intense heat, hence if scale prevents its ready passage to the water, a burned and weakened sheet will soon result. Special attention is called to the hand hole in the front head at the right height to afford a view of the crown sheet when the cover is removed and a lighted candle inserted for this purpose. A stream of water can be sent in from a hose nozzle that will remove mud and loose scale from this flat surface, consequently a boiler of this type should never be put into service unless provided with suitable hand holes to cover this point. Where the small part is supported by a cast iron chair, care should be taken to paint the shell with Dixon's Graphite Grease No. 676 to prevent contact of the two metals, as otherwise dampness may gather here and corrosion will weaken the shell, causing it to fail under heavy pressure.

(To be Continued.)



DIXON'S GRAPHITE BRUSHES

Where the conditions of service permit, Dixon's Graphite Brushes give better satisfaction than is possible with any other brush.

One of its chief advantages lies in its lubricating properties, which prevent wear on the commutator. Commutators on which Dixon's Graphite Brushes are used, often run for several years without being turned down, and keep smooth and true.

Also because of their lubricating properties, Dixon's Graphite Brushes prevent friction losses on the commutator and keep it automatically lubricated, rendering unnecessary the use of any applied lubrication.



DIXON'S GRAPHITOLEO

A preparation of Dixon's Special Graphite No 635 and pure petrolatum or vaseline, absolutely warranted not to gum or become rancid.

Dixon's Graphitoleo has the proper consistency for light bearings, slides, gears, and wherever, in fact, a light-bodied grease may be used.

As an all-around lubricant for automobile use it is unsurpassed. For axles, slides, gears and chains it need not be diluted. A superior general lubricant and rust preventive for guns, bicycles, copying-presses, and for general use.

OVERCOMABLE

That which can be mastered, overpowered, vanquished, subdued, conquered, is overcomable.

The heating of an automobile engine and its loss of compression and power is overcomable by means of proper lubrication and better attention of the driver.

The groaning of the cylinders of a locomotive, the annoyance of hot pins, the heating of bearings and the dreaded hot boxes of the cars or locomotives are overcomable, and usually are readily subdued by the engineer who has wisely provided himself with a box of Dixon's Pure Flake Graphite.

The experience of engineers and superintendents of motive power as well as of others, teaches us that the thousand and one troubles due to friction, are overcomable by the man who is wise enough to have by him a quantity of that wonderful material—Dixon's Flake Graphite.

A MATTER which is sometimes not given sufficient attention by the electrical inspector, says D. McKellin in *Electrocraft*, is the bonding together of ducts at the boxes. Ordinarily the locknut and bushing are depended upon entirely for continuity of the return circuit, and this is very poor dependence as it seldom is tight enough to amount to much as a current carrying medium, and when it is forced up tight the contact is made on the enamel of the box in most cases. The contact thus obtained is usually enough to blow a six-ampere fuse, but will give poor results on one of three or four hundred capacity. Many mechanics, too, use grease, oil, soap, or any lubricant that comes handy to facilitate pulling in on long runs or runs of large wire. The best grease does some harm to the insulation, while some kinds are exceptionally bad. Therefore it is necessary for the careful inspector to look for indications of its use. Powdered plumbago or soapstone will never harm good insulation—hence are permissible, and are perhaps the only kinds of lubricants that should be allowed.

—*Electrical Record*.



DIXON'S EVERLASTING GRAPHITE AXLE GREASE

Saves the man's time.

Saves the horse's strength.

Saves the wagon's wear.

Dixon's Graphite Axle Grease is the most durable and efficient of all axle lubricants, and an article that has been famous for many years, for both light and heavy vehicles of all kinds.

A hot box and stuck wheel are impossibilities in the presence of flake graphite and, pound for pound, Dixon's Everlasting Graphite Axle Grease will far outlast all other axle lubricants.

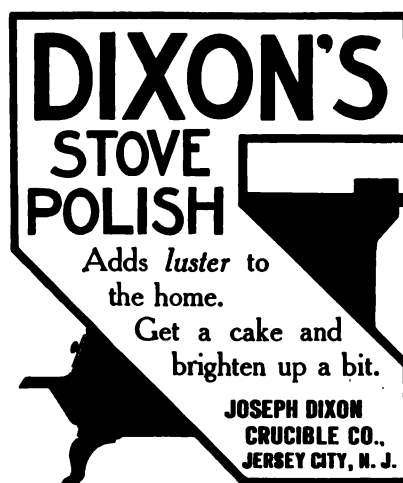
It is not work that kills men; it is worry. It is not revolution that destroys the machinery, but the friction.—BEECHER

'When a bit of sunshine hits ye
After passing of a cloud,
When a fit of laughter gits ye
An' yer spine is feeling proud,
Don't fergit to up an' fling it
At a soul that's feelin' blue,
For the minit that ye sling it
It's a boomerang to you.'

—N. Y., N. H. & H. R. R. News.

AFTER an unkind remark about the coffee his landlady asked acridly: "You've heard of bricks without straw, haven't you?"

"Yes," replied the backroom boarder. "It sounds like my mattress."—*Life*.





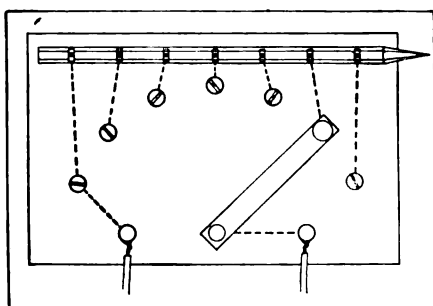
THE PENNSYLVANIA RAILROAD CO.'S BRIDGE AT LINDEN, PA.

The half tone appearing herewith shows what is commonly known as the Linden Bridge. This is a Pennsylvania Railroad structure. The bridge contains about 1100 tons of steel, and is protected with Dixon's Silica-Graphite Paint.

It is, of course, not unnatural that we should believe Dixon's Silica-Graphite Paint a good one. But we would point out that our belief is not based solely on a natural bias, but that tests in practical work have demonstrated the remarkable durability and protective qualities of Dixon's Silica-Graphite Paint and that the best and largest railroads in the country, which have developed efficiency and economy to the highest points, largely specify and use Dixon's Silica-Graphite Paint.

HOW TO MAKE A PENCIL RHEOSTAT

Take an ordinary lead pencil and cut seven notches at equal intervals on the pencil down to and around the lead, leaving it bare. A seven-point switch is constructed on a board of suitable size, making the points by using screws that will go through the board. A small piece of tin or brass will do for a switch and is fastened as shown. The connections are made on the back side of the board, as shown by the dotted lines.



SIMPLE RHEOSTAT

This will reduce forty to fifty volts down to five or ten volts for short lengths of time.—Contributed by ROY NEWBY, San Jose, Cal.—*Popular Mechanics*.

It is always the privilege and pleasure of an old established firm to receive letters like the following:

"I was an iron moulder in Bennington, Vt., when I first saw Dixon's Stove Polish, and I have used it more than fifty years. I was born in Bennington, Vt., October 22nd, 1813."

This comes to us from Mr. Melvin Wadsworth of Ludlow, Vt., who, as the figures show, is ninety-six years old.

We reproduce below an ad of the American Manufacturing Company. Note that this company employs the finest procurable flake graphite in the manufacture of transmission rope.

NOT COMMON

"PLUMBAGO" OR "BLACK-LEAD,"

but the finest procurable Flake Graphite is used in the scientific internal lubrication of

"American Transmission Rope"

This is but one of the details that combine to make this rope the finest example of the rope maker's art and the most durable and economical Transmission rope in the world. Write for a sample and a copy of our "Blue Book of Rope Transmission."

The American Manufacturing Co.,

65 WALL STREET, NEW YORK CITY.

GRAPHITE CYLINDER LUBRICATION

A growing number of motorists are using graphite in various ways in connection with other lubricants. A method of using it consists in mixing it in small quantities with the oil in the case providing splash lubrication. The same is often done in the gear case. A method which utilizes the clinging properties of this very effective lubricant is to blow it dry in small quantities into the cylinders with the piston down, of course, so it will adhere to the walls and fill up the almost invisible pores of the metal where it acts as a reservoir of lubricant.

—*Cycle and Auto Trade Journal*.

A SIMPLE REMEDY

To improve the compression of a gasoline engine when the piston rings and the walls of the cylinder become worn, open the crank case and sprinkle about one tablespoonful of flake graphite in the front end of the cylinder. Repeat this application once every two weeks and you will find that the graphite will fill in the low or worn places, which will bring the compression up to normal again.

W. O. HAY in *Popular Mechanics*.

THE ECONOMY OF SKIMMING BRASS INTO WATER

By A. L. HAASIS in *Metal Industry*

The process of skimming brass direct from the crucible into water has now been made such an easy operation that its casting has been robbed of one of its most disagreeable features. Above all, however, is the great saving of metal. By the use of this method of skimming, from one-half to two pounds of clean metal are recovered from every pot skimmed and can immediately be utilized in the production of new and marketable castings.

The skimming tank, as supplied to the trade by The Metal Dross Economy Company of Bristol, Conn., consists of a cast-iron box 20 x 22 inches square, either sixteen or twenty inches deep. It is covered with a steel top in which there is an opening about eight inches square in the shape of a funnel. Over this opening a top shield is placed standing at about forty-five degrees. The object of this shield is to protect the caster from the heat, dirt and a great deal of the smoke which is so objectionable in skimming metal in the usual way.

The cast-iron box is sunk into the casting room floor so that its top comes about two or three inches below the top of the crucible, and allows for the ashes that are left on the floor to support the pot. There should be ashes enough so that the crucible will stand alone. The tank is then filled with water within a couple of inches from the top or thereabouts.

The crucible filled with brass is now brought up to the tank and the dross skimmed directly into the water, and in the same manner as that followed with the old fashioned skimming heap. The skimming of the dross into water immediately stops the spelter smoke and does away with the skimming heap, thus leaving a nice, clean casting shop. As soon as the dross from the crucible strikes the water, all oxidation of metal ceases. In the old fashioned method, the brass continues to oxidize even after it has been skimmed and lies on the skimming heap. The oxide of zinc immediately separates from the metal as soon as the water is reached and the latter takes the form of pellets of varying size.

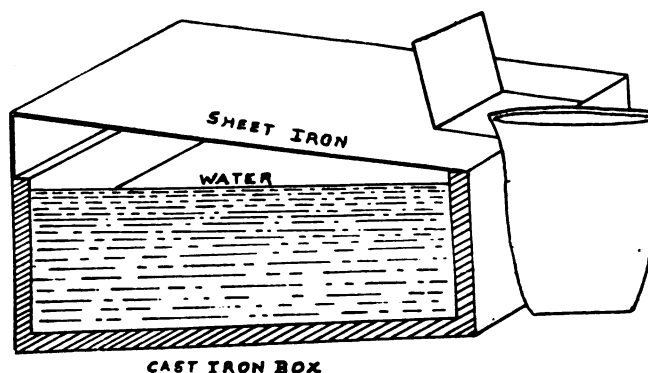
When the skimming has been completed, the tank is ready to clean out at any convenient time. The slimes and metal are shoveled out and washed through a half inch and afterwards a thirty mesh riddle. The skimmings should not be allowed to dry, as the oxide of zinc will then adhere to particles of the brass and become much harder to clean off. The very fine shot metal, too, is then more difficult to save.

The skimmings, if desired, may be put into a barrel and kept wet and afterwards cleaned at any time. A barrel will hold the dross from 500 to 800 No. 30 crucibles if the same is run through a No. 8 riddle, and the large pieces taken out. The metal which passes through a No. 30 riddle either may be washed in a tub with a stream of water running through it, or the process may be continued with riddles as fine as desired. By doing so, the Metal Dross Economy Company process will return the exact amount of metal that is skimmed from a pot. All that remains in the riddle is nice, clean and usable metal. The residue from this is, of course, more or less fine dust and oxide. It is barreled up and sold to refiners.

In this process all the charcoal that remains unburned is

saved and may be put back into the crucible again. There is no danger in the use of wet charcoal, and if anything, it is a little better if it is a trifle damp, provided it is not pushed under the metal too rapidly. In a brass rolling mill or a brass foundry, where charcoal is used on the brass, it is a fair statement to make that fully one-third of the charcoal used in the first place is saved by this process. It is actually better when used a second time on account of the fact that it is finer and protects the metal from gases and sulphurous fumes from the coal in a more efficacious manner. It is well known that these gases and fumes are very injurious to melted brass.

It is no exaggeration to state that sixty per cent more skimmings can be saved with the Metal Dross Economy process than can be obtained by the use of a stamping mill or crushing barrel, as all of the smallest shot and thin pieces are ground up and lost, and ninety per cent more saved than in any other way where there is no crushing machine in use. For example, sixty pounds of clean metal were taken that had gone through a No. 30 sieve, and were put in with the ashes as they came from the casting shop fires. The ashes were then ground in the ordinary way and including the metal that was in the ashes,



let it be more or less, only 21½ lbs. of clean metal could be obtained. This was done simply to show that the amount of fine stuff that is ground into powdered dust, becomes lighter than the hard cinders and is then washed away by the water used in crushing.

There is no difficulty in using the metal obtained from the tank, however fine it may be, and it is so clean that there is no clogging-up on the inside of the crucible when it is melted. Material so fine that it is almost invisible to the naked eye is saved and may be used over again.

In order to comply with the demands of large and small foundries, it has been found necessary to make the tanks in two sizes: The No. 1 size will hold the skimmings from fifty No. 25 crucibles, and the No. 2 size holds that of sixty No. 70 crucibles without the necessity for cleaning out. The water will remain at about the same depth in the tank, no matter how much dross or charcoal may be skimmed into it. The oxides and fine charcoal take up water in about the proportion in which they fill the tank.

It is almost impossible either to state or have a person realize how closely the metal is saved from dross when this process is used. The only way to realize it is to dry the metal that has been recovered and then run it through a set of riddles as fine as desired. The value of the process and what it will do can then be fully appreciated. It is pleasing to note that,

although the process has been in use for over six months, and has been installed in many brass casting shops and foundries, there have been no complaints at all and it is thus apparent that satisfaction is being constantly obtained.

A LUBRICATING PROBLEM

How Dixon's Flake Graphite Solved It

Some months back we had a letter from the Houchin Machine Company of Atlanta, Ga., a portion of which ran as follows:

"We are building a machine that has three hollow gun metal rollers, one weighing 1386 pounds, the other two weighing 752 pounds each. The journals are eight inches in diameter by eight inches long, and five and one-half inches in diameter by eight inches long. These rollers are heated by gas to a temperature of from six to seven hundred degrees. Any oil or grease that we have used upon the journals of these rolls becomes carbonized into a gritty substance that cuts the journals out in a very short while, so that we frequently have to bush the boxes and put new sleeves on the journals. It had occurred to the writer that possibly flake graphite could be used on the journals without any grease or oil, but we are uncertain as to the best method of applying the graphite to the bearings, and whether the dry graphite will flow through channels cut for it."

We wrote in response, requesting a little further information concerning conditions and suggesting the use of Dixon's Special Graphite No. 635, a sample of which we forwarded. Upon further information being supplied us, we wrote advising the cutting of grooves in the bearings so as to assist in the proper distribution of the graphite over the journal and bearing surfaces. Under date of April 24th, 1909, we have the following letter:

"My recent experience with your special lubricating graphite No. 635 was for the dry lubrication of machine roller journals. These rollers being heated to a temperature of about 750° Fahr. These rolls are heated by Bunsen burners, and are kept at about the temperature mentioned for ten hours a day. Any oils or grease, or any mixture of oil or grease, or grease and graphite, rapidly carbonizes on the journals of these rolls and forms a hard, gritty substance that cuts the journals and boxes out very rapidly. The use of your No. 635 flake graphite has proved an entire success on this machine. The machine has been running now for three months continuously, and has never had a drop of oil nor grease of any description upon the journals, which are six in number, the two largest being 9½" in diameter by 8" long; and the four smaller ones 7½" in diameter by 8" long; and neither the journals nor the boxes show the slightest wear. Both journals and boxes have a very thin film of graphite adhering to their surfaces. When this thin film is cleaned off, the tool marks of the machine work show on the surfaces of both journals and boxes the same as the day they left the machine shop. Furthermore, the machine turns remarkably easy.

"This method of lubrication has proved an entire success and the firm for which we built the machine are extremely pleased with the results obtained. The method of applying the graphite to the journals is very simple, the channels for conveying the lubricant to the journals are cut in the boxes about ⅜"

wide and ¼" deep, one on top and one at a little above and on each quarter. Besides this, a spiral groove of the same dimensions is cut for about two turns, commencing at about 1" from one end of the box and near the bottom, and ending at about 1" from the other end of the box and near the bottom. These grooves are half round in section. Into the top straight groove, a ½" pipe hole is drilled and tapped, a piece of ½" pipe screwed into this with a reducing socket on the top end to 1¼" pipe, a 1¼" nipple with a 1¼" cap complete the cup. A piece of ⅜" round C. R. steel with one end on the journal, with the other end up near the top of the cup, complete the device. The journals take about a desert spoon full per day to each journal, the machine attendant occasionally removing the cap from the cup, churning down a little of the graphite with the ⅜" rod. A small amount of graphite works through, coming out at the ends of the boxes, and thus lubricates the shoulder of the journal where it rubs against the boxes, at one end of the machine, the other end of the roll having no shoulder, to allow for expansion of roller when heated.

"I have no doubt that there are many situations where the conditions are similar to those on this machine, where this plan of lubrication could be used to advantage. Trusting that the above may be of benefit to engineers, who have similar problems to solve, I am,

"Very truly yours,

"(Signed) J. R. HOUCHIN, M. E."

WHEN THE GHOST WALKED

John Sharp Williams was declaiming against the atrocity of one of the rules of the House of Representatives. He was ripping it up and across, slashing right and left, and was much in earnest.

"But," interposed Representative Sereno E. Payne, of New York, the Republican floor leader, "you are yourself a member of the Committee on Rules, as I understand it."

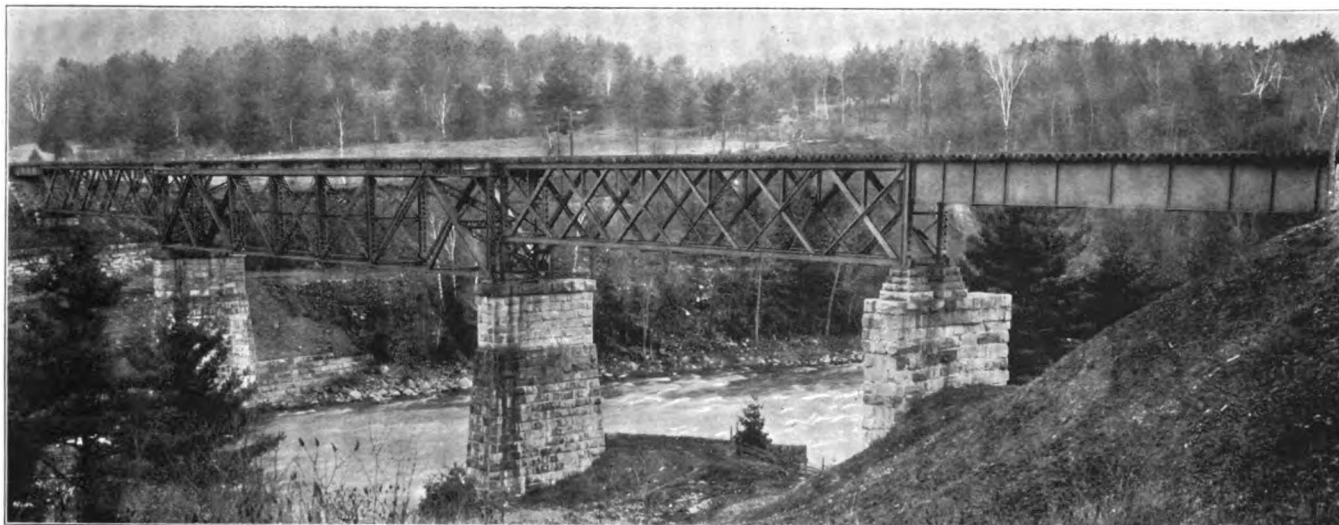
"I am," said Williams, "nominally."

"The gentleman attends the meetings of the committee, unless I am mistaken," persisted Payne.

"I am allowed to attend the séances," replied Williams, "but nobody consults me about the spiritualistic materializations."—*Saturday Evening Post*.

Do you realize that every locomotive engineer makes use of Dixon's Graphite? He does, and it pays him to use it. It will pay every man who owns an automobile to use Dixon's Motor Graphite. Let us tell you about it.

**Joseph Dixon Crucible Co.,
Jersey City, N. J.**



THE DELAWARE AND HUDSON CO.'S BRIDGE PAINTED WITH DIXON'S SILICA-GRAPHITE PAINT

DIXON'S PAINT IN RAILROAD SERVICE

Railroads using Dixon's Silica-Graphite Paint for bridges agree in recognizing this product as a thorough success.

The two photographs appearing on this page, illustrate two structures on the Delaware & Hudson Railroad system. A careful inspection of these bridges reveals the fact that Dixon's Paint, after a service of five years, remains in excellent condition, offering perfect protection to the metal.

With a view to determining absolutely the best, the Delaware & Hudson Company have tested many protective coatings. The proof that they found it is the condition of Dixon's Paint on a score or more of their largest structures which were painted several years ago. These bridges certainly offer a striking illustration of an enduring and highly satisfactory protective coating.

Dixon's Silica-Graphite Paint has won a permanent reputation for durability and efficiency. The value of this paint was first explained by the Dixon Company, when they put it on the market forty-five years ago. Since that beginning, the largest railroad systems in the country have demonstrated by actual use the efficiency, endurance, and economy of Dixon's Silica-Graphite Paint.

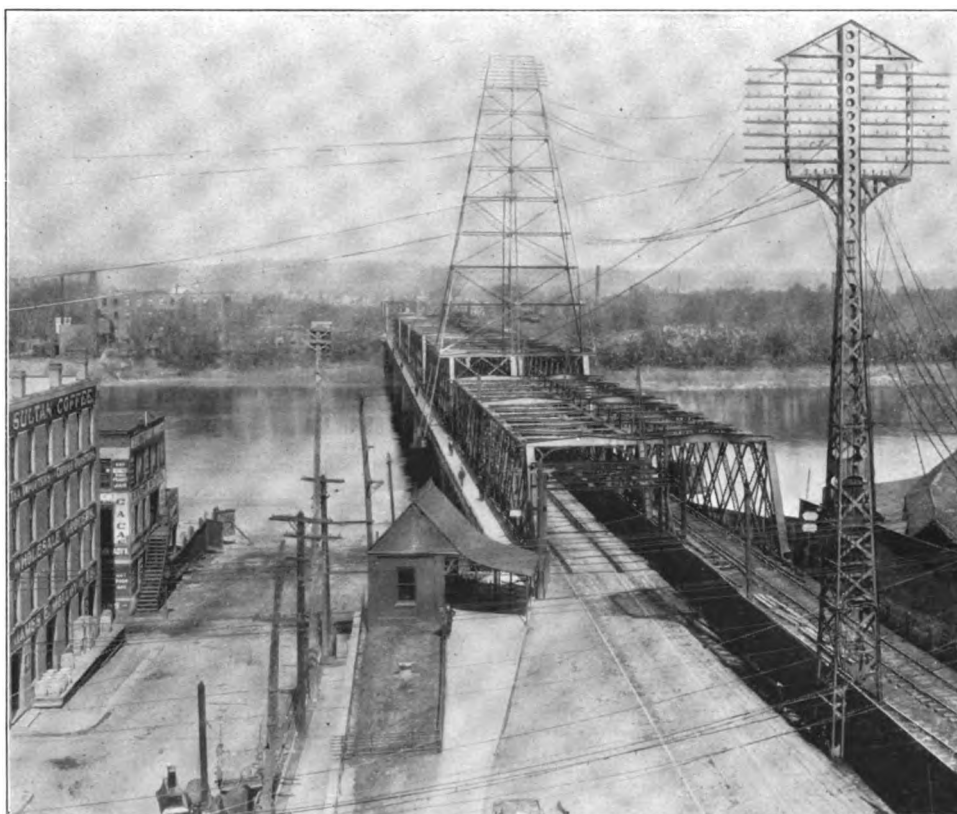
Durability records will be cheerfully furnished to those interested. The Paint Department of the Joseph Dixon Crucible Company is well equipped to make useful suggestions on the protection of steel structures.

A MAN feels awfully rich when he's got a few dollars his wife doesn't know about.—*Success*.

FROM A LOCOMOTIVE ENGINEER

For hot crank pins, driving boxes, Dixon's No. 635 Graphite has no equal, also for air pumps. I don't see how a man can run an engine without a can of this graphite all the time on his engine. It also makes the prettiest boiler head you ever saw. It would do any man good to look at the boiler head of my engine, fixed with No. 635 graphite. Mix bees wax and tallow, teaspoonful of white lead. Let it melt and coat the head good. Just before it dries sprinkle the dry graphite on waste and rub it on after it is dry, the more you rub in with the cotton, the brighter it gets.

Yours truly,



THE DELAWARE AND HUDSON CO.'S BRIDGE PAINTED WITH DIXON'S SILICA-GRAPHITE PAINT

THE HEATING OF TIRES

We notice more or less comment in papers devoted to motor-ing, concerning the heating up of tires. There has been some recommendations of soapstone and talc to be used on the inner tube, thus helping to prevent friction of the inner tube on the shoe.

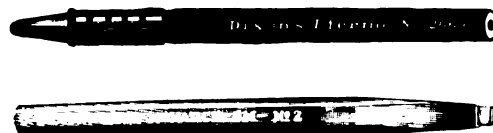
The very best thing that can be used is Dixon's Flake Graphite. Its superiority over talc and soapstone is well known—there is really no comparison between the two former materials mentioned and Dixon's Flake Graphite.

The only objection, that may be urged against the graphite is that it is black. If this is in the mind of the user a serious objection, then, of course, Dixon's Flake Graphite will not be used. But if the reduction of the friction between the inner tube and the shoe is a "paramount issue," Dixon's Flake Graphite *will* be used and heating of tires due to friction between shoe and inner tube will be reduced to the lowest possible minimum.

ORIGIN OF THE "MARATHON" RACE

In reply to an inquiry as to the origin of the "Marathon" race, *Bicycling World and Motorcycle Review* gives the following:

Marathon was a village on the East coast of Attica, situated in a plain of the same name, about six miles in length and three miles in width. It is gloriously memorable as the scene of the defeat of the Persians under Datis and Artaphernes by the Greeks under Miltiades, in 490 B. C. As nearly as can be reckoned, the distance between Marathon and Athens was twenty-six miles three hundred and eighty-five yards. According to Grecian history, as soon as the great victory of Miltiades was accomplished, he dispatched a fleet runner to carry the news to the waiting assemblage of feverish Greeks in the stadium at Athens. Historians tell us that the young message bearer's name was Phidittides and that he ran the entire distance between Marathon and Athens clad in the cumbersome armor of the period. After proclaiming the victory he melodramatically fell dead. The Grecian government accepts the story, which has been handed down from generation to generation, and in 1896 established the Marathon foot race over the old road upon which Phidittides ran, to perpetuate admiration of the feat.



DIXON'S AMERICAN GRAPHITE PENCILS

For every requirement and in all grades of hardness. Unequaled for smooth, tough leads and uniformity of grading.

ARTISTS

Hexagon, fine cedar finish, eleven grades of hardness.

OFFICE PENCILS

Round and hexagon. All finishes. Eight grades. Furnished with or without rubbers. Also copying pencils. Best colored crayons in all shades.

ERASIVE RUBBERS

Choice erasive rubbers and typewriters and ink erasers. In cake, bar and disc and popular sizes.

Ask your stationer for Dixon's Pencils.

GRAPHITE STOPS A CYLINDER LEAK

RACINE, WIS., April 21, 1909.

Joseph Dixon Crucible Company,

Jersey City, N. J.

GENTLEMEN:—

Hoping my experience with your graphite might interest and help some of my brother engineers, I wish to tell them through your publication the benefits we obtained by its use. We have a 24 x 48 Allis engine which, when I took charge four years ago, had a bad leak between the cylinder and frame. I tried to calk it, but it would only last a little while and then would be worse than ever. I had been using graphite before, and when I took charge here at once started to pump in the cylinder before shutting down at noon and night a little graphite mixed with cylinder oil. In less than two months the graphite had worked into the joint and entirely stopped the leak, saving us \$ \$ \$ at the cost of a little graphite.

Respectfully yours,

W. B. PUTNAM, Chief Engineer.



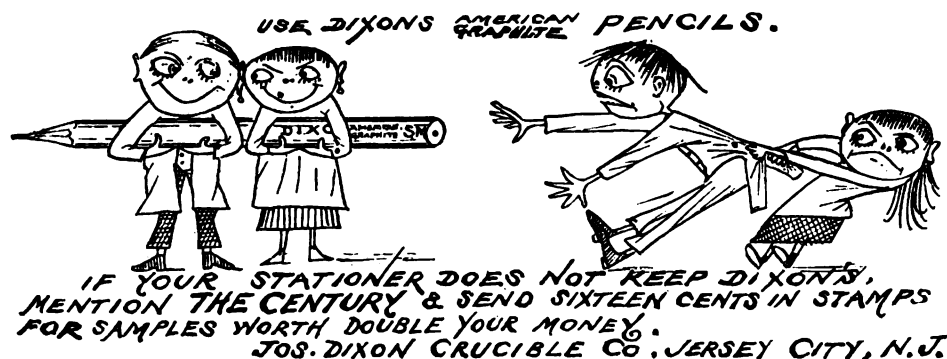
DIXON'S UNCLE SAM PENCIL No. 1241

The near approach of the Nation's most popular holiday, "July Fourth," seems a fitting opportunity to call the attention of our readers to a pencil that should be popular also, as it appeals to the spirit of the times as a National souvenir, and to all users for its choice quality.

This pencil contains a No. 2 grade of hardness of lead, is finished in red, white and blue, stamped in silver and can be obtained promptly from jobbers and the retail stationery trade everywhere.

IT IS well known that diamonds, though extremely hard, are also very brittle, and easily fractured by a sharp blow.

It has been shown, however, that if a good diamond is placed between the jaws of a hydraulic press, and the pressure is applied without jerk, so as to avoid fracture due to brittleness, the jaws may be made to meet without the slightest injury to even the edges of the diamond, a perfect impression of which will be found in the hard steel jaws, which have closed around it and retained its image just like so much wax.—*American Machinist*.



DIXON AD, VINTAGE OF '86

One of the Dixon Company's friends was hunting in the wilds of Maine last summer, when he came across an issue of the *Century Magazine* dated February, 1886. The copy was discovered in the trunk of an old tree on the Canadian Trail, and upon examination was found to contain the advertisement we produce herewith.

We do not know whether this ad appeared before the coinage of the phrase, "Children cry for it," or whether it was the source of inspiration for this slogan. It does represent, however, conditions of this century as well as last—contentment with Dixon's American Graphite Pencils, contention without them.



DIXON'S SOLID BELT DRESSING

Positively stops all slipping. Put up in one-pound bars of a shape and size very convenient for the hand. It is applied to belts without stopping the machinery, thus saving trouble and delay. The composition of this dressing is such that it can never cause any clogging, hardening or cracking of the belt even with years of use. On the contrary, it preserves the original elasticity and pliability of the leather and imparts great driving power.

Equally satisfactory for leather, rubber, canvas or fabric belting.

WHEN some cavalymen were going through a riding drill, one of the men's horses bolted with him and was making his way towards the stable when an officer met him. "Where are you going?" inquired the officer. "I don't know, sir," shouted the cavalryman, as he flew past, "ask the horse."

The horse, like the engine, frequently knows more than the driver, and each sometimes wears itself out doing unnecessary work.

There is a moral in this, that in the engine may point to the use of Dixon's Ticonderoga Flake Graphite as a better means of lubrication.

GRAPHITE IN BOILERS

One of the jobs I had in my earlier experiences was that of boiler washer in a plant containing six 250-horsepower water-tube boilers. These boilers were washed out every six weeks. When I close up a clean boiler, I put two pounds of flake graphite in each drum.

When a boiler was opened up after this treatment, and the turbine cleaner run through the tubes, the scale came off very readily. By examining the side of scale which was next the tube, graphite could be seen clinging to it. The same condition was found existing in the drums.

Since I received my license and had charge of boilers, I have used this same idea and find it works fine, especially in return-tubular boilers, where the tubes are harder to clean.

Chicago, Ill.

FRANK WULFFEN.

—From *Power and The Engineer*.



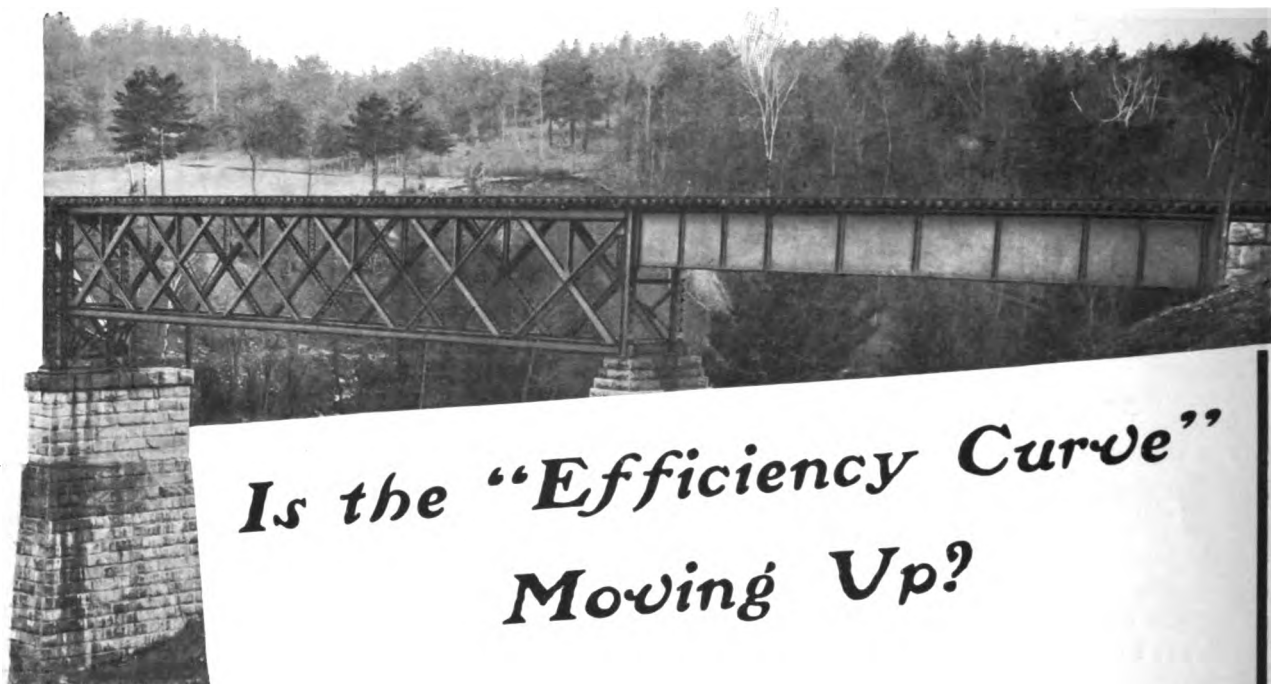
DIXON'S TRANSMISSION LUBRICANT No. 688

This product has proved eminently successful in transmission cases of motor cars. It is composed of high grade graphite grease with which is incorporated a small percentage of finely ground cedar fibre. This results in a resilient, spongy mass that prevents noise and wear in the gears.

It should not be used in cases where there are small oil holes leading to bearings, but otherwise it is the very best lubricant that can be selected.

It is heavy in consistency and should be thinned down to the desired degree by adding light cylinder oil before being used.

It is put up in cans of one pound to fifty pounds, and for sale by all dealers in automobile supplies.



Is the "Efficiency Curve" Moving Up?

In other words, are you getting longer service from the paint you are using on exposed structures, or is there no improvement shown by your records? It would seem reasonable to suppose that efficiency *might* be raised. If you are not wholly satisfied, or if you believe improvement in length of service is possible, try

Dixon's Silica-Graphite Paint

This paint is designed for long protective service. Its pigments, silica and graphite, are inert and practically indestructible. The vehicle is first grade, double boiled linseed oil. Theoretically no improvement is possible in the composition of Dixon's Paint. And what's more, it "makes good" in practise. Hundreds of railroad structures are protected with Dixon's Silica-Graphite Paint. Will you try it?

Write our Paint Department about the matter.

Joseph Dixon Crucible Company,
Jersey City, N. J.

THE STANDARD PRACTISE FOR THE CEMENT- ING OF THREADED CONNECTIONS

All threaded connections wanted tight and still possible to break (and one may never know when it may be found necessary to break a joint), should be made with a graphite compound.

The Committee on Recommended Practise at the Fourteenth

Annual Convention of the Air Brake Association, advised that threads on valve seats, valve cages, cap screws and caps, be coated with a mixture of plumbago or graphite and oiled, after being screwed into places.

The Joseph Dixon Crucible Company manufacture a graphite pipe-joint compound which gives most excellent satisfaction for this work, and it has the full indorsement of many railroad men.

LIBRARY OF THE UNIVERSITY OF ILLINOIS

GRAPHITE

VOL. XI.

JULY, 1909.

No. 7.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

COPYRIGHT, 1909, BY JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

CHANGES IN SCHOOL EQUIPMENT

Two striking facts are apparent in the history of American Public Schools during the last half century: *First*, in that period there has been a mighty uplifting of the IDEALS of public education; and *Second*, our so-called "strenuous life" has penetrated the class-room and has demanded of our children an ever more rapid acquirement of the ordinary branches of elementary instruction.

These two facts have reacted powerfully upon the ingenuity of American inventors, with the prime result that there has been a complete transformation and real evolution of all the various paraphernalia of the school-room—desks, black-boards, maps,

books, globes, pens, pencils, chalk, crayons, ink, paper, hygienic devices, etc.

Perhaps the most prominent feature of the advance in "Ideals" is the comparative importance which ART now assumes in the public school curriculum,—including *Writing* and *Drawing*, the former with pencils of wide diameter and big leads, and the latter both in black (with lead pencil, pen and charcoal) and in colors (with chalk, crayons and paints). This is only the practical recognition of the truth that Nature teaches by objects, and that next to the object itself, for purposes of instruction, comes its visual representation on paper or canvas. *Drawing*, therefore, has an educational function of the very highest importance; it trains the eye and the hand as well as the mind, and this is true also, though in a minor degree, of correct systems of writing, which have only recently been brought to rest upon the sure foundation of true psychological and pedagogical principles.

Accordingly, it is in the line of "tools" for drawing and writing, more, probably, than in any other direction, that inventive ingenuity has been quickened, and the result is that vast industries, involving the labor of thousands of workers and millions of money, have been established to manufacture such tools.

The Joseph Dixon Crucible Company constitutes one of the largest and most important of these industries. It makes a specialty in the way of pencils for free-hand drawing and shading, and in the way of pencils for all kinds of school work.

In learning to write, the first exercise should be with the "free arm," and no pencil made quite fills the requirement as well as Dixon's "Beginners."

With a Dixon's "Beginners" pencil a pupil will rapidly learn to execute any of the movements necessary to form the letters of the alphabet.

The possibilities of drawing in color are fully developed through the use of Dixon's Colored Crayon Pencils and Solid Colored Crayons. Realizing the importance of color work as a factor in the education of the young, the Dixon Company has spent a great deal of time and money in perfecting the Dixon Colored Crayons with the result that for toughness and strength of leads, for vividness and variety of color, for smoothness and softness, Dixon's Colored Pencils and Solid Colored Crayons are absolutely without an equal.

The efforts of the Dixon Company have been greatly appreciated by educators generally, and each year shows a large increase in the adoption and use of the Dixon products.

A thoroughly revised edition of the catalogue of Dixon's School Pencils has been brought out through the energy and ability of the Philadelphia Branch of the Dixon Company, and a copy of this catalogue will be sent to anyone interested in school work. Address Joseph Dixon Crucible Company, Jersey City, N. J., or 1020 Arch Street, Philadelphia.

A PRACTICAL WORD ON AIR BRAKE LUBRICATION

There occurs below an extract from a very interesting article concerning the air brake, contributed to *Locomotive Firemen's Magazine* by Will. W. Wood.

We do not know Mr. Wood, but his article shows him to be thoroughly equipped with a sound, practical knowledge of the air brake system. It affords us no little satisfaction to be able to quote as follows:

"It has long been a hard matter to find a lubricant just viscid enough to hang on and stay where you want it, to have all of the necessary qualities and be of the same consistency summer and winter, not to dry up nor gum—for use on equalizing discharge pistons, triple valves, rotary valves and all cool-air brake parts.

"A newly prepared lubricant, Dixon's Air Brake and Triple Valve Grease, is a graphite of an impalpable fineness, ground with an oil of such texture that it becomes at once the lubricant that everybody interested has been looking for. Spread on a plate, it is seen to be highly transparent and free from lumps and roughness."

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

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IT DOES US PROUD

in this month of July, wherein is enthroned our glorious Fourth, to say that the Joseph Dixon Crucible Company are using the same power on the Ticonderoga River that was used in 1756, 1757 and 1758 by the French in their saw mill located there for cutting timber for the building of Fort Carillon.

One is reminded of the lines of Tennyson,

"Men may come and men may go,
"But I go on forever."

Unceasing is the flow and the power of the Ticonderoga River. It has worked alike faithfully for the French, the English, the Americans, and now for the Dixon Company.

The heights to the north or northwest of the Dixon mill were fortified by the French for the protection of their mill, and these heights were known as "Mill Heights." The same heights were again fortified in 1777 by Burgoyne and renamed Mt. Hope—their name to this day.

In the famous battle between the French and the English

on July 8, 1758, Abercromby used the mill as his headquarters during the fight, it having been captured the day previous by Colonel Bradstreet with a detachment of Colonial troops.

The famous old "Military Road," built before 1750, crossed through the mill yard, very probably over the location of the present office of the Dixon Company.

During the summer season thousands of tourists pass the Dixon office on their way to "Old Fort Ticonderoga," and the Dixon Company will probably erect a tablet in front of its office commemorating the above historical facts.

FROM A WELL-WISHER

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

GENTLEMEN:—

The writer, having a heart as well as other mortals, begs once more to have the address changed from Colfax, W. Va., to Monongah, W. Va.

The above has reference to that old standby, GRAPHITE. I have been receiving it "gratis" now for several years, and it is anxiously looked for every month. When I moved from Colfax to Monongah, I kindly notified you people, then later on I again notified you. Now I want to say this, "I don't want to miss one copy of GRAPHITE, therefore I would like to have the address changed as above."

About ten years ago the writer introduced your goods in this part of the state, graphite and graphite paint. Your letter files will back me up in this. I have always been a close and true friend of everything that comes from Dixon and still am the same. Of course I get the publication on from Colfax (sometimes) hence my desire to have the address changed as stated above.

Pencils. Yes, I have one that was presented to me from your factory when they were first put out, Dixon's Eterno No. 2060. It has been with me daily and has grown to 5¼ inches long. I only use it for my signature and nothing else. Could I take some along with me, I would register with St. Peter at the gates in the Sweet Bye-and-Bye.

With best wishes towards everything pertaining to DIXON, I beg to remain, as ever,

Very truly yours,
H. C. F.

A CORRECTION

In our issue of June, we credited the article entitled "The Economy of Skimming Brass Into Water" to *Metal Industry*. We hasten to acknowledge error on our part since the article was taken from the *Brass World*.

SPELL THIS

Some of you who think you are well up in spelling just try to spell the words in this little sentence:

"It is agreeable to witness the unparalleled ecstasy of two harassed peddlers endeavoring to gauge the symmetry of two peeled pears with a pair of scissors."

Read it over to your friends and see how many of them can spell every word correctly. The sentence contains some of the real puzzlers of the spelling book.

PREVENTING OF CORROSION OF STEAM MACHINERY

By W. H. WAKEMAN

Chapter XIV

Fig. 47 shows an internally fired boiler that is set at a slight angle from the horizontal. It has no flat crown sheet, but the grates are set in a large flue that is entirely surrounded by water. This may prevent more or less heat from escaping, as it must go from the furnace into the water, but it may radiate from the water and the steam into the atmosphere unless measures are taken to prevent it.

At the highest part of this flue, near the upper row of tubes a plug is shown, the object of which is to give an effective alarm when the water line has fallen low enough to approach the danger point, but while there is still enough to cover the tubes. On a certain occasion a steam engineer who was already in

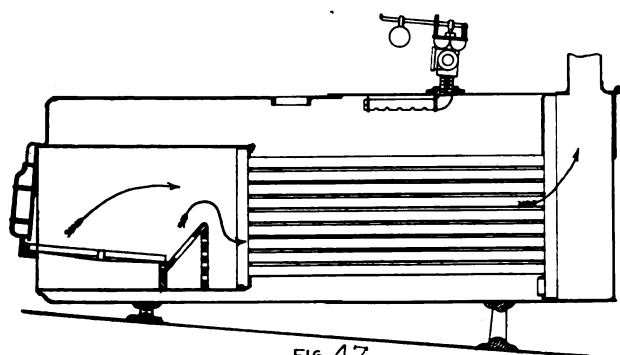


FIG. 47.

charge of a small plant, presented himself before a Board of Examiners in order to show these men his qualifications as an engineer. One of them asked him where he would place a fusible plug in a boiler, to which he gave several answers, all of which showed that he did not understand what they were talking about, and on being pressed for a more definite reply, he stated that he did not know what a fusible plug is. He was excused from further trouble at that time, given another chance later on, and was finally granted a license to run the plant which was very small. However, the boiler was large enough to cause much damage if it failed under pressure.

Now a fusible plug is filled with a mixture of soft metals, the proportions of which determine its melting point. For illustration, if a fusible plug is filled with metal composed of one part lead and two parts tin, it will melt at the temperature of steam at ninety pounds gage pressure, according to one eminent authority, but opinions seem to differ as to the exact melting point of these mixtures. This is probably due to the fact that a certain metal may not always be the same at different times and places.

Accepting this as approximately correct, a fusible plug made according to these specifications will not melt when covered with water in a steam boiler carrying ninety pounds gage pressure, but when exposed to steam at this pressure and corresponding temperature, it melts and allows steam to blow into the furnace, thus giving warning that cannot be mistaken, of approaching danger. This seems to be perfectly logical until we remember that the temperature of water that is about to be evaporated equals that of the steam above it.

This places the whole matter in another light, and shows that it is not a high temperature of steam that melts the plug, but its failure is due to the fact that heat passes through it readily when water is on one side, but its passage is retarded when it is covered with steam, hence an accumulation of heat melts it.

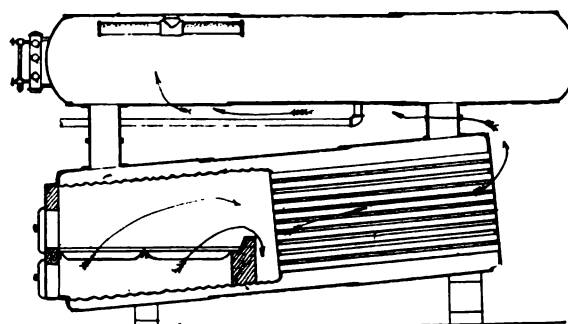


FIG. 48

This action may be illustrated by the case of a clean boiler plate in everyday practise. Heat passes through it so rapidly that its temperature does not rise much above the temperature of the water covering it, but if it is coated with scale or grease on the inside, its temperature will rise much higher, owing to the accumulation of heat.

It is a good idea to have extra plugs on hand in a plant to use in case one or more fail, as it may be inconvenient to procure them when wanted. Although they are made of brass, it is good practise to cover the threads on them with Dixon's Flake Graphite mixed with cylinder oil before screwing them into place, as it will lubricate the threads and enable somebody to take them out easily whenever it becomes necessary.

In the cases of Figs. 46 and 47 it appears as if the heat would escape to the stack before it could be utilized in making steam, but Fig. 48 shows a boiler that presents more heating surface after the tubes are passed, hence the temperature of the escaping gases may be reduced, but this will depend on other conditions, for if the ratio of heating to grate surface is large enough, there will be no heat wasted from a locomotive boiler.

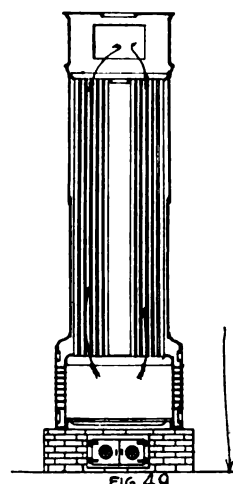


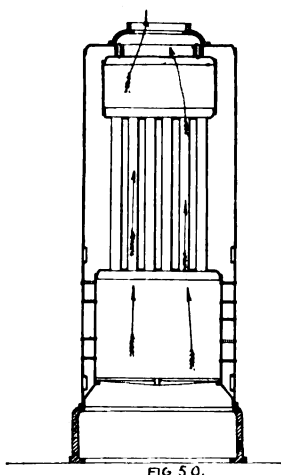
FIG. 49.

Fig. 49 illustrates a vertical fire tube boiler of approved design. The furnace is surrounded by water, but there is a straight passage through the tubes from the furnace to the stack, hence a good chance is presented for heat to escape, yet this type of boiler is very efficient when it is not overloaded. If this boiler was fitted with flues six inches in diameter, much heat would be lost, because it would have a chance to rise in large masses, but inasmuch as two inch tubes are frequently used and they are never larger than three inches, the mass of heat rising from the furnace is separated into small masses and thus

brought into more thorough contact with the iron or steel surfaces that are covered by water on the other side. The result is that the escaping gases are not much warmer than the steam which surrounds the upper ends of the tubes, and

even where they escape at a high temperature, the steam is superheated thereby and rendered more valuable for use in modern engines.

It is difficult to keep the water leg of such a boiler clean and in good order, because it is comparatively cool, and as there is no circulation of water at this point, sediment settles here, and unless it is removed at frequent intervals it becomes baked on the iron and thus forms into scale. In a certain plant where there are several of these boilers in use, the engineer keeps a chain in the water leg of each, and every time that a boiler is cleaned this chain is drawn back and forth, thus stirring up the mud and making it an easy matter to wash it out without further trouble. Hand holes are provided for washing mud off from the crown sheet.



The lower part of this boiler is larger in diameter than the upper shell, and the two parts are connected by a peculiar shaped plate as shown, for the following reason. The tubes and the outer shell do not expand and contract alike, hence this form of a connection is provided, as it springs enough to compensate for this difference.

The water legs of all such boilers are liable to become corroded and thus rendered unsafe for high pressures unless they are painted with Dixon's Dark Red Silica-Graphite Paint. This applies more especially to the part

below the grates.

Fig. 50 is a vertical fire tube boiler with a submerged head. The object of this is to prevent the hot gases from coming into direct contact with any part of the boiler which is not covered by water on the other side. In many cases the stack is continued straight upward from the upper head to the required height. This is bad practise, because when it rains hard water trickles down, and becoming mixed with soot forms a thick paste that will corrode the upper head and ends of the tubes, unless they are scraped clean and then painted with Dixon's Paint as above mentioned.

THE PROPER CARE OF CHAINS

The owner or driver of a chain driven car should learn very early in his driving career to care for the driving chains in a proper manner. While chains have been known to run an entire season without any care or additional lubrication, this practise is depreciated. To care for a chain properly, one should get into the habit of lubricating every so often and so time these intervals that they occur before the chain is in need of the oil. In addition to this regular lubrication, there should be some set time at the end of which the automobilist takes the chain off, cleans it thoroughly, and inspects it to detect faults.

A month is a good length of time for this, and an excellent way to proceed is to take the chain off and throw it into a pan of kerosene. In the morning all of the dirt will have passed from the chain to the liquid and can be found in the

bottom of the pan. Take the chain out and throw the liquid and dirt away. Then clean the pan and in it wash off all traces of the kerosene with gasoline. Having done this, hang the chain up to let the gasoline evaporate.

The chain then will be both clean and dry. Now inspect all rollers, links, rivets and bushings, taking note of any unusual wear as indicated by looseness or play. If defects are found, they should be remedied. Then, having the chain clean, dry, inspected and passed upon as O. K., an excellent method is to soak it, or, better, boil it in a heavy melted lubricant. The best quality of beef tallow mixed with a little *graphite* is good. many do not like the latter, in which case a high-grade oil may be substituted for the purpose.—*Automobile*.

As perhaps most readers of GRAPHITE know, the Dixon Company prepares a chain compound that provides the best of lubrication and protection for driving chains. This saves the nuisance of preparing a mixture, and insures at thorough incorporation of the proper ingredients in right proportions.

OILING IMPROVEMENTS

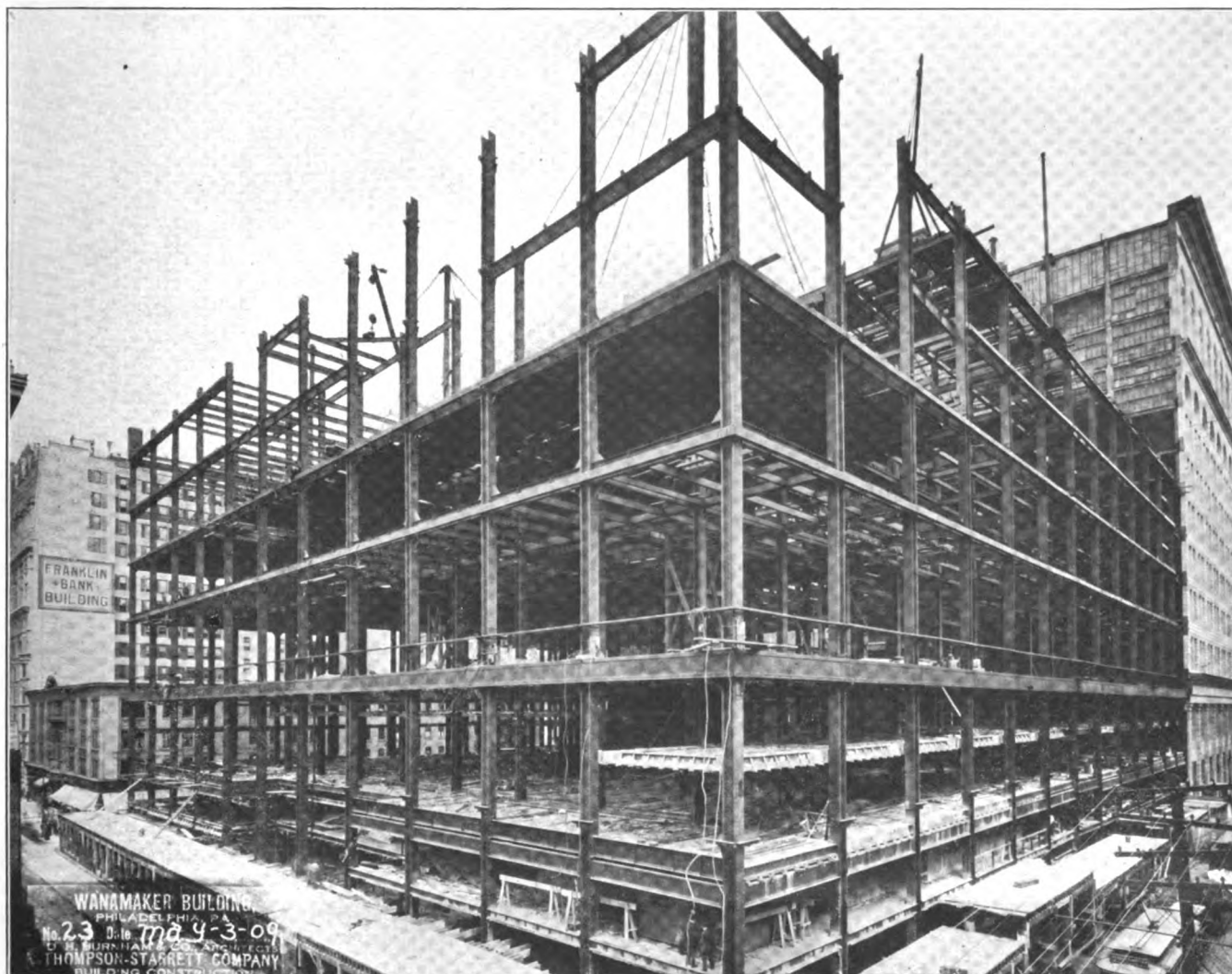
The tendency is to make the ordinary care of a car as easy as possible, partly by improving durability, partly by making everything accessible to which access may be required in the course of ordinary service, and partly by simplifying the processes of cleansing, adjusting, filling, and oiling. The number of minor bearings in the steering gear, pump, fan, springs, brakes and gear-shift brake, and clutch-control is very large, and an hour spent going from bearing to bearing with an oil can is just as much to be deducted from the usefulness of the car as if it were spent repairing the radiator. It is a curious fact that some designers, even of the best cars, have not fully grasped this fact, and continue to put out automobiles with absurdly inadequate provision for *lubricating* these numerous minor bearings. In other cars, however, *grease cups* large enough to hold *lubricant* for many hundreds of miles may be found on every spring-end and steering gear joint, while the bearing points under the floor are covered with dust-proof oil covers large enough to hold several good-sized squirts of thick oil. It takes but a second to give a grease cup a turn, and cars equipped as just described, can be fully attended to as regards oiling in a few minutes once a week. The logical result is that such cars are kept oiled when others equally well-made but slighted in this particular, are developing squeaks and rattlings.

—*Auto Dealer and Repairer*.

We make graphite cup greases in six degrees of hardness; these greases are composed of the best grade mineral oils with the correct proportions of Ticonderoga flake graphite, and consequently when they are used friction losses are reduced to a minimum. If you are unacquainted with them a postal card to us brings samples.

DIXON'S Ticonderoga Flake Graphite is known by its wonderful smoothness combined with remarkable endurance. It builds up the microscopical irregularities of the bearing surfaces as no other graphite can.

It forms a veneer-like coating of graphite on the surfaces which reduces friction, lessens wear and insures economy and satisfaction.



WANAMAKER PHILADELPHIA STORE

THOMPSON-STARRETT CO., Contractors

Some months ago we showed a picture of the completed Wanamaker Store at Philadelphia, as reproduced from the architect's perspective. The above view shows an actual photograph of the final section of the structure now under way.

The completed building will contain 30,000 tons of steel and will be the largest single mercantile building in the world.

This is the class of structure on which Dixon's Silica-Graphite Paint is extensively used. In this case two coats were applied; Dixon's Dark Red and Natural.

The photograph from which the above cut was made was kindly furnished us by the Thompson-Starrett Company, contractors for this building. C. H. Burnham & Co. were the architects, and Mr. Wm. C. Haddock was the engineer of construction. The steel work was supplied by the American Bridge Company.

WHAT'S IN A NAME, OR COONY CONEY

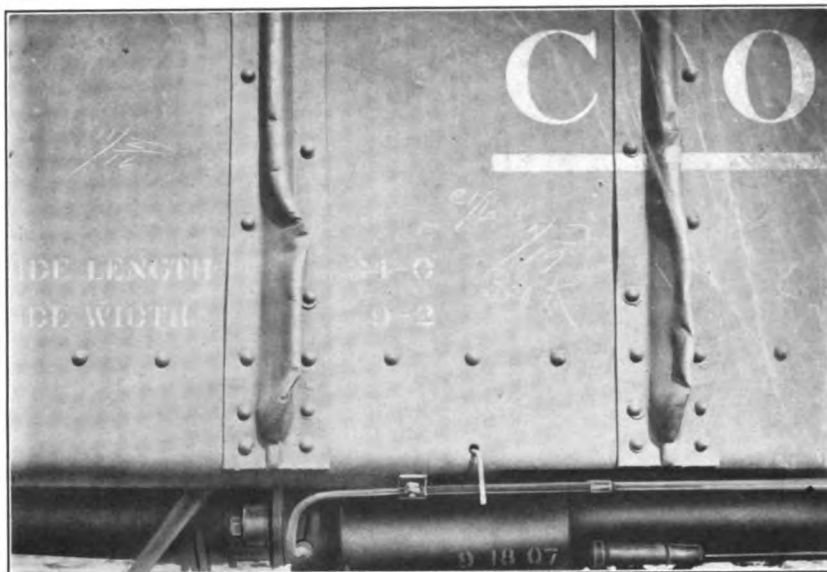
That famous resort which is at least known by reputation all over the country, Coney Island, has lately been the object of some legal complications. The Sunday law with reference to amusements has been applied. According to the law all "amusements" must be educational or religious in character. Behold, then, our old Luna Park with new labels.

The *New York Times* reports the following metamorphosis: Over the entrance is hung a large sign describing Luna Park as an "Institute of Learning." Inside, the Monitor and Merrimac show is described as a "picture lesson of the first ironclads." The Mountain Torrent is "an institute for the practical illustration of the mountain logging sluice." The Dragon's Gorge is "an institute for the practical demonstration of gravitation," while the burning of the Prairie Belle has developed into "a visualized presentation of John Hay's poem dealing with Jim Bludsoe." The scheme of rechristening as outlined is carried out uniformly.

This would seem to prove that everything in life, even amusement, has a certain amount of educational value. The combination as now arranged at Luna Park enables us to study while we play or play while we study, according to our preference. The condition of affairs also leads us to contemplate the quotation, "What's in a name?"

A LADY asked a druggist if he had a city directory. He said he did not, and then added, "Madam, I am stumped for once." She asked what he meant, and he told her it was the first time he hadn't been able to say he had something just as good.

This may be applied to dealers in engineers' supplies; they cannot say they have something just as good as Dixon's Ticonderoga Flake Graphite.



THE ELASTICITY OF SILICA-GRAPHITE PAINT

It is curious that with all the evidence that has been put forth in speech and press as to the desirability of using a paint on all metallic structures that should dry with a firmly adhesive and yet elastic coat, that so much time should be spent on those paints that are known to be lacking in these very qualities, particularly that of elasticity. A metallic surface, especially if coated with a dark color, is subjected to wide ranges of temperature, and the paint skin, if cracking is to be avoided, must be able to follow all of these changes of temperature without any impairment of its own integrity. The same thing holds true of the change of dimension due to distortion of the shape of the surface painted. It is not expected that any paint will be able to withstand the abrasive effect of a glancing blow such as that which may be received by a steel car in service, but it is desirable that if the parts are bent so that they do not require immediate repairing, the paint will still hold intact and not crack, so that moisture cannot get into the metal and start that rust which is so destructive to both the metal and the paint which covers it. A fine example of this toughness and elasticity of a painted surface is shown in the accompanying illustration of a portion of a steel car that had been painted with the Dixon Silica-Graphite Paint. The car had been struck and the stakes badly distorted, and yet, in all of the surface, there were no cracks in the paint, which still remained intact, and continued to thoroughly protect the metal from the action of rust. This accident and the stretching of the paint did not happen when the car had been freshly painted, so that the paint film was necessarily elastic, but after it had been in service for about a year, when the paint had dried and had reached its condition of permanent elasticity or rigidity, as might be; evidently the former in this case. It is merely one more instance pointing to the durability and endurance of these paints.

COATING BOILER TUBES

Coating the inside of boiler tubes with a thin layer of graphite, says *The Electric Railway Review*, has given excellent results in a boiler plant using water containing excessive amounts of scale-forming salts. These deposits have required frequent

drilling of the tubes. It was found by experience that much less scale adhered to the tubes coated with graphite and that the scale which did form was far more easily removed from them than from uncoated tubes. The application of graphite might be said to have insulated the steel from deposit and thus rendered the tubes more easily cleaned; and when cleaned their interiors appeared perfectly smooth without the usual patches of scale remaining, as is the case after a tube has been bored with a turbine-cleaner. The one application of graphite so adhered to the metal that the interior of the tube had the appearance of a gun barrel, the graphite coat remaining intact after several cleanings. The graphite may be prepared for application to the interior of tubes by mixing it with pure mineral oil in an amount sufficient to form a thick paste, or it may be applied dry.—*The Electrical Age*.

A LINE of black and colored lead pencils, consisting of a thousand kinds and styles; a line of plumbago or graphite crucibles varying in holding capacity from a few ounces to a ton of melted metal; a line of graphite greases and lubricants for all sorts of purposes and requirements; a line of four standard colors of the original graphite paint—the best protective paint known—comprise some, but not all, of the famous "Dixon Graphite Products."



BOTTOM-POURED CRUCIBLES

For some classes of work, the bottom-poured crucible possesses advantages not shared by the style of crucible ordinarily used. For instance, in the making of castings from white metal or aluminum the bottom-poured crucible is advantageously used. By its use, a casting is secured that is practically free from all impurities. Because of this feature, the bottom-poured crucible has been aptly called "self-skimming." Naturally, the fluxes and other impurities rise to the surface of the molten metal and remain there. The metal being poured from the bottom, these impurities have no opportunity to get into the casting but sink only with the level of the metal and are finally left in the bottom of the crucible.

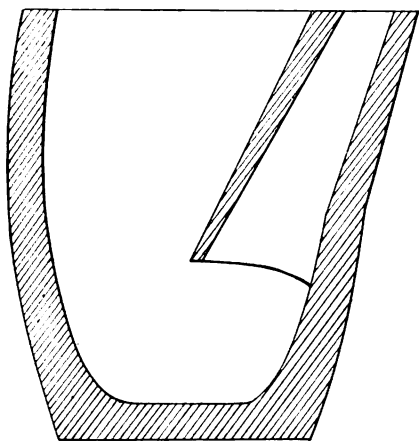


FIG. 1.

In the ordinary shape of crucible, where the metal is poured from the top and where a comparatively wide surface is exposed to the air, more or less oxidation takes place. As the pouring proceeds, practically the entire contents of the crucible is exposed to the air in a wide surface. With the bottom-poured crucible this condition does not obtain. While a longer exposure of the surface level results, this surface (considered as an imaginary film) remains intact and prevents like exposure to the remainder of the contents.

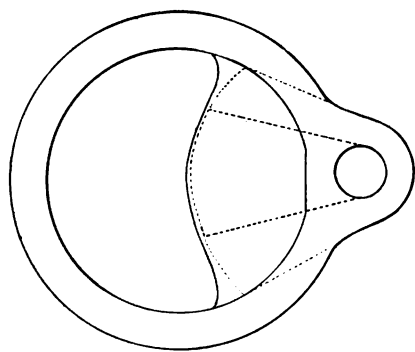


FIG. 2.

The cuts appearing herewith show the Dixon bottom-poured crucible, manufactured by the Joseph Dixon Crucible Company, Jersey City, N. J. Fig. 1 shows a sectional view of crucible, Fig. 2 shows how the crucible appears as one looks down upon it. This bottom-poured crucible may be likened roughly to a teapot in which the "snout" is within the body

rather than extending separately. It will be readily seen how this arrangement well protects the contents from exposure to the air and how the surface is maintained unchanged in the pouring as previously explained. Many concerns that find it necessary or desirable to get pure, unoxidized metal castings are using these bottom-poured crucibles.

—*The Metal Industry.*



DIXON'S TRACTION BELT DRESSING AND LEATHER PRESERVATIVE

Dixon's Traction Belt Dressing preserves the leather and restores the lost efficiency and clinging power of neglected belts. It likewise gives new belts elasticity and flexibility, so that only a heavy overload can cause them to slip.

Dixon's Traction Belt Dressing imparts clinging power, not stickiness; does not readily gather dust, and thoroughly waterproofs the leather.

In paste form to be applied warm in small quantities.



DIXON'S GRAPHITE PIPE-JOINT COMPOUND

Dixon's Graphite Compound is not a cement which hardens, but rather a true lubricant for the thread of pipes, bolts, nuts, turn-buckles, lag screws, etc., making them easy to screw up and allowing them to be taken apart without damage or trouble.

Joints made up with this material can never rust, corrode, or stick, but may always be separated without difficulty after any length of time. Dixon's Graphite Pipe-Joint Compound is very much superior to red or white lead.

DIXON'S Ticonderoga Flake Graphite is prepared in two sizes of flake. No. 1 is the large flake and No. 2 is the small flake. For feeding through oil pumps into engine cylinders the small, No. 2, flake is recommended. For all heavy bearings the large, No. 1, flake is recommended because of its greater endurance.



DIXON'S SPECIAL GRAPHITE No. 635

This is a special grade of Dixon's Pure Flake Graphite, selected with great care and ground to an impalpable degree of fineness. Dixon's Special Graphite is largely used upon locomotive mechanisms, typesetting machinery, light, close-fitting bearings, spindles, bobbins and other delicate parts of textile machinery, stationary gas engines, cyclometers, scientific instruments, etc.

For certain purposes it is thoroughly ground with just enough sperm oil to make it more adhesive. If this style is wanted simply specify No. 635 "oiled" in the order.

It is packed in one, five and ten pound self-sealing cans, and in boxes or kegs in larger quantities.



DIXON'S WATERPROOF GRAPHITE GREASE

In all respects a high-grade lubricant for loose, open bearings, gears, slides, etc. It possesses great adhesiveness and tenacity, and will not be thrown from gears, chains, wire ropes, sprocket chains, and the like, traveling at a high speed.

Dixon's Waterproof Graphite Grease contains no soluble ingredients and cannot be washed off by fresh or salt water, by acid or alkaline water.

These properties highly commend its use upon wire ropes and chains, gears, cranes, derricks, dredges, steam shovels, pile drivers, winches, hoisting engines, quarrying and mining machinery, railroad switch and signal mechanism, and every sort of machinery exposed to water and the weather.

Remember that Dixon's Flake Graphite adds largely to the endurance and economy of any oil or grease to which it may be added.

Dixon's Waterproof Graphite Grease may be obtained from dealers generally. It is sold in packages of five pounds to barrels.



Old-Timer Talks No. 2

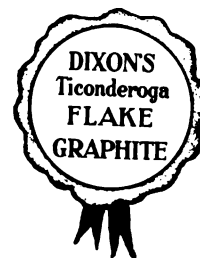
Some of the boys when they open the cylinders, think everything is O. K. if the inside of the cylinder is bright like silver. But suppose they only found some bright streaks, then they'd think friction did it, of course.

Now, for a fact, a bright surface shows a "friction polish"; an "oil polish" is somewhat dark. Rub a surface with a polishing rag and see how bright it gets—friction does it.

The very best polish I know is the "graphite glaze." Graphite, if the flake is pure and thin—Dixon's kind, you know—fills in the grain of the metal and makes it as smooth as glass.

You ought to send to the Dixon people for a free sample can. It's "great stuff."

Joseph Dixon Crucible Co.
Jersey City, N. J.



ADVOCATES GRAPHITE

Editor Review:—While I am not in favor of argument on local affairs, yet it seems like I have a "say" coming in regard to an article in your March number from Mr. W. W. White in regard to North Dakota water and graphite.

In the first place, he is certainly inconsistent when he gives an analysis of the water at Courtney to apply to our locality, thirty miles away. At my place I think we have as fine water as there can be found anywhere. The best test of water to be found is the common kitchen tea kettle. In that we have not adhesive scale. All that gathers falls loose in kettle. Until I began threshing and went eight to fifteen miles east we had no trouble with the water whatever. At home we have plenty of springs. In the neighborhood where we threshed they have none and we began to have water troubles almost as soon as we put the water in the boiler. When cleaning we got no scale. The first time we used graphite my engineer put about three tablespoonfuls in the suction supply hose and pumped it into the boiler with the water. At the next cleaning we got plenty of scale. Afterwards I put graphite in at the filling plug while boiler was cold, of course. I generally use about one-fourth to one-third of a pint put in a day or two before I cleaned; would not do without it.

As far as I know, Mr. White is correct in his Courtney analysis, etc. But even then I think graphite used as above will be of great benefit, as I understand it will eventually form a coating on iron when it can get to it that will keep the scale from adhering to the flues, etc. After using it we could find no scale on crown sheet or any place where we could see the inside of boiler. A trial will convince an engineer whether it is of benefit in this particular case.

Marstonmoor, N. D.

H. H. McCUMBER.

—From *Threshermen's Review*.

WHAT WE PAY FOR WATER

We cannot get away from the fact that we are obliged to pay a very steep price for water when it is part and parcel of some of the things we want.

The *Scientific American* tells us that such is undoubtedly the case—vouched for by the highest analytical authorities.

Uncooked beef or mutton contains.....	75%	water
Lamb contains only.....	64%	"
Pork contains.....	50 to 60%	"
Smoked bacon contains only.....	22%	"
The flesh of pigeons.....	70%	"
Fowls and Ducks.....	70%	"
A fat goose as little as.....	38%	"
Fish range from.....	40 to 80%	"
Milk fresh from the can.....	86 to 88%	"
Turnips contain nearly.....	90%	"
Cabbages also contain nearly.....	90%	"

Cucumbers, vegetable marrows, and pumpkins are only five per cent removed from water itself, chemically speaking. In other words a cucumber—an object with which a fairly effective blow might be dealt—has from seven to nine per cent more water than the milk which we drink out of a glass!

Apples contain.....	80 to 82%	water
Strawberries contain.....	90%	"
Grapes contain only.....	80%	"

Foods which contain only a small percentage of water are usually unfit for human consumption until they have been cooked.

Nature does not really cheat us when she makes us pay a premium on water. A large quantity of water is necessary not only to render food palatable, but also to make it at all edible. If the stomach is deprived of its allowance of water necessary for the digestion of any particular food, it fails to do its work.



DIXON'S GRAPHITE CUP GREASES

Dixon's Graphite Cup Greases are made in six degrees of hardness, numbered 0, 1, 2, 3, 4 and 5 respectively, their consistency varying only slightly through a long range of temperatures.

By virtue of the presence of flake graphite they have much greater efficiency and wearing properties than plain cup greases, and can therefore be used under conditions where plain greases of equally soft consistency could not possibly prevent overheating and cutting. The service records of these lubricants show great economy in use.

Dixon's Graphite Cup Greases are sold in packages ranging in size from one pound to one barrel.

We believe they will be found quite superior to the ordinary cup greases. They are well worth the trial of anyone.

MODERN AIR BRAKE REQUIREMENTS

A prominent air brake man writes us:

The satisfactory operation of a triple valve depends upon its sensitiveness. The sensitiveness of a triple valve depends upon thorough and proper lubrication. With the coming into general use of the Graduated Release Triple Valves, both in steam and electrical road operation, with its increased number of positions, this triple valve requires greater sensitiveness of its movements for the proper action designed. Therefore lubrication of a very thorough and efficient character becomes still more important than was the case with the older styles of triple valves where the brake was released entirely from any application. Dixon's Air Brake and Triple Valve Grease will be found a very valuable adjunct in the thorough lubrication of these triple valves, as it has been found in its use with the older styles.

IN REPLACING the gland of a water circulating pump use plenty of graphite with the packing. The spindle is seldom sufficiently lubricated, and the graphite will go a long way toward remedying this.—*Automobile Dealer and Repairer*.



DIXON'S TICONDEROGA FLAKE GRAPHITE

Has wonderful value as a lubricant in all mechanical bearings. It is used dry or mixed with oils or greases according to requirements.

Dixon's Flake Graphite No. 1 represents the larger or coarser flake, while Dixon's Flake Graphite No. 2 is the finely ground flake. Both are of the same quality and different only in degree of fineness of flake.

Some prefer No. 1 and some prefer No. 2. The coarser flake is recommended for the heavier work; for gaskets and ground joints and many other uses, while the finer, No. 2, flake, is recommended for cylinders and for mixing with oils for feeding through oil pumps in the lubrication of steam cylinders. It will pay anyone who is interested in better lubrication to send for a copy of "Graphite as a Lubricant."

GRAPHITE FOR ENGINE CYLINDERS

Experiments on this subject have been made by Walter M. Durand, who gives the results in *The American Machinist*. He used a six horse-power horizontal gas engine, running on city gas, and finding it impossible to mix the graphite and oil and feed them through the ordinary lubricator, he tried feeding the *graphite dry* through the air intake, using also cylinder oil through the lubricator.

Experimenting with different amounts of graphite, the best results were found when the engine was fed about $\frac{1}{2}$ to $\frac{1}{8}$ oz. per horsepower, in a ten hour run; the amount should be distributed as evenly as possible throughout the ten hours. The experiment has continued for four months, during which time the engine was given complete test, and at the time the report was made was in good condition. At the end of the fourth month the cylinder walls were found in fine condition, without a sign of a scratch.—*Practical Engineer*.

IN THE DEEP SEA

When it is considered that the greatest depth of the ocean is about five miles, or 26,400 feet, a dive of 204 feet which was made by diver James Hooper, may seem small.

This dive was made to the wreck of the ship Cape Horn off Pichidauque, South America.

According to the *Chicago Chronicle*, this dive of 204 feet is really a remarkable performance because of the crushing pressure of the water. The ordinary pressure of the air at sea level is 14.7 pounds on each square inch, or on the whole human body of 20,000 pounds. Of course, if this pressure were not exerted equally in all directions on the inside as well as on the outside of the body, life would be impossible.

Now when a man goes under water its pressure increases rapidly, until at thirty-five feet depth it is just about equal to the air pressure. As he continues to descend the pressure increases, until at 100 feet it is about three times the air pressure; at 140 feet four times; at 170 feet five times, and at 204 feet six times.

To balance this tremendous pressure from without a corresponding pressure of air within the diver's body must be carefully maintained by the air-pumping machine with which his helmet is connected by tubing. From this it is evident that only strong and courageous men can stand the strain of the diver's work, and that every precaution must be observed in both descending and ascending, especially the latter.

The safe rate of ascent from depths less than eighty feet is not more than two feet in one second; for greater depths the rate must be still lower. There have been cases of divers who ascended rapidly through fright or carelessness and on reaching the surface they exploded, the blood pouring out from the openings of the body.



DIXON'S CARPENTERS' PENCILS

We manufacture a full line of Carpenters' Pencils, in seven, nine and twelve inch lengths—beveled corners and oval shape—and in white wood, tortoise and other finishes.

The leads in Dixon's Carpenters' Pencils are carefully graded, strong, smooth, and prepared with a special view to meeting the needs of the carpenter. Careful workmen who take a pride in their tools, find Dixon's Pencils give them perfect satisfaction.

Particulars will be cheerfully furnished on application.

FABULOUS

It happened one day
On a street car, they say,
And the man came from Mount St. Elias,
He stood on his feet,
Gave a lady his seat,
And "she thanked him." (3:6 Ananias.)

—HARVARD LAMPOON.

WITH a can of Dixon's Ticonderoga Flake Graphite at hand the engineer can give an added value to his oil or grease. He can make a thick mixture of graphite and oil for use on all threaded connections, insuring tighter joints and connections that will not rust under any condition, and which can be opened with ease at any time.

UNCTUOUSNESS OF GRAPHITE

The following appeared in the February 25, 1909, issue of *Iron Age*.

"It is well known that when used as a lubricant graphite should be of such quality as to give a smooth veneer or coating to the parts to be lubricated. One of the most essential qualities is purity, for where an impure graphite is used as a lubricant, it carries into the machinery dangerous friction-creating materials, the impurities of natural graphite being talc, mica, clay and sand.

"To be a first-class lubricant a graphite should be amorphous, very fine, soft and unctuous. It should not have brightness or luster, as brilliancy in graphite denotes ability to reflect light, and a graphite that reflects light indicates that its particles are of some measurable size and of a compact, homogeneous nature, a condition in sharp contrast to the fine, soft, unctuous qualities that assure the graphite of possessing superior merit as a lubricant. Brightness or blackness in graphite is no indication of its purity or value."

To which we replied as follows:

"In the February 25, 1909 issue of *Iron Age* there appeared an article on page No. 667 concerning Unctuous Graphite. We feel a little like criticising this article both perhaps in what it says and what it would have the reader infer.

"In the first place we would take exception to the use of the word "unctuous" in that, as it is presented, it might give the reader the impression that this quality of unctuousness was peculiar to a particular kind of graphite. If there is any one characteristic of graphite which distinguishes it from all other material, it is this particular one. It might be safely said that all graphites possess this quality or else they are not graphite. To be sure, there are grades of so-called graphite which are so low in actual graphite as to be but slightly unctuous, but pure graphite always possesses this quality in the highest degree. If the word is used to distinguish one particular grade of graphite from other grades which possess this quality in a less degree, then the use of the word is of course entirely correct.

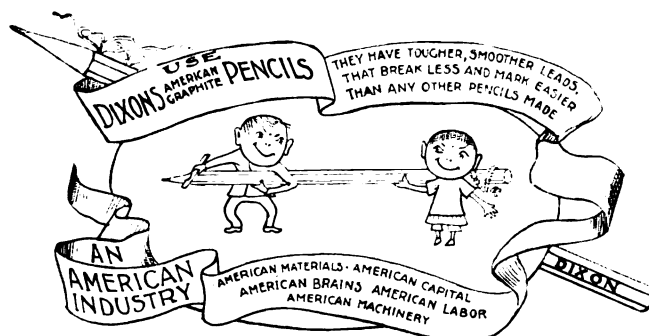
"The article also says that graphite lubricants should give a smooth veneer, or coating to the parts to be lubricated. This of course is evident, but if the surface is to be smooth it certainly cannot be obtained from rough surfaces. The blackness of all amorphous graphite is due to the fact that the surfaces are irregular, because if the surfaces were smooth they would reflect light. Such varieties of graphite only become smooth and reflect light when they have been compressed and take a surface which is equivalent to all natural crystalline graphites.

"It is not conceivable that amorphous graphite, or any graphite for that matter, performs any function so long as it is moving about freely in the lubricant which is used to distribute it. It is only when the particles become attached to the metal surfaces that they begin to do their work. The article states also that brightness or blackness in graphite is not an indication of its purity or value. This statement is far truer as applying to amorphous graphite than crystalline graphite. In crystalline graphite it is a very good indication as to its purity but not its value for any particular purpose; thus the heavy crystalline Ceylon graphite, which is extremely

bright and unctuous, is not so available for lubricating purposes as the American flake graphite, which is of decidedly different form. The Ceylon graphite is all crystalline, and when pulverized may be compared in shape and size with any kind of granular material, like sand.

"On the other hand, the American form of crystalline graphite is invariably of the very thin and remarkably smooth variety and which has for years been the standard for lubricating purposes. Neither is the blackness of amorphous graphite a proof of its purity as it might be obtained in all sorts of ways, the blackness of coal or charcoal or any carbonaceous material being the same as blackness of amorphous graphite. Furthermore, the test of unctuousness is not without defects when applied to amorphous graphite for the reason that while the graphite might contain only a moderate amount of graphite carbon, it could easily be adulterated with talc or soapstone, which would impart considerable of this quality to it. The bright silvery lustre of flake graphite would be impaired to such an extent by such adulteration as to render detection easy, and so this lustre is to be considered an indication of quality. It may be stated as an axiom that fineness of pulverization renders adulteration easy.

"This statement does not refer so much to artificial amorphous graphites as to the natural amorphous graphite, whose carbon percentage may be raised by the addition of carbonaceous materials like coal."



DIXON'S AMERICAN GRAPHITE PENCILS

A lead pencil is an essential for pocket or desk, and while some people are satisfied with any that will make a mark, a large majority select those which are of fair quality, or which are suited to their special requirements.

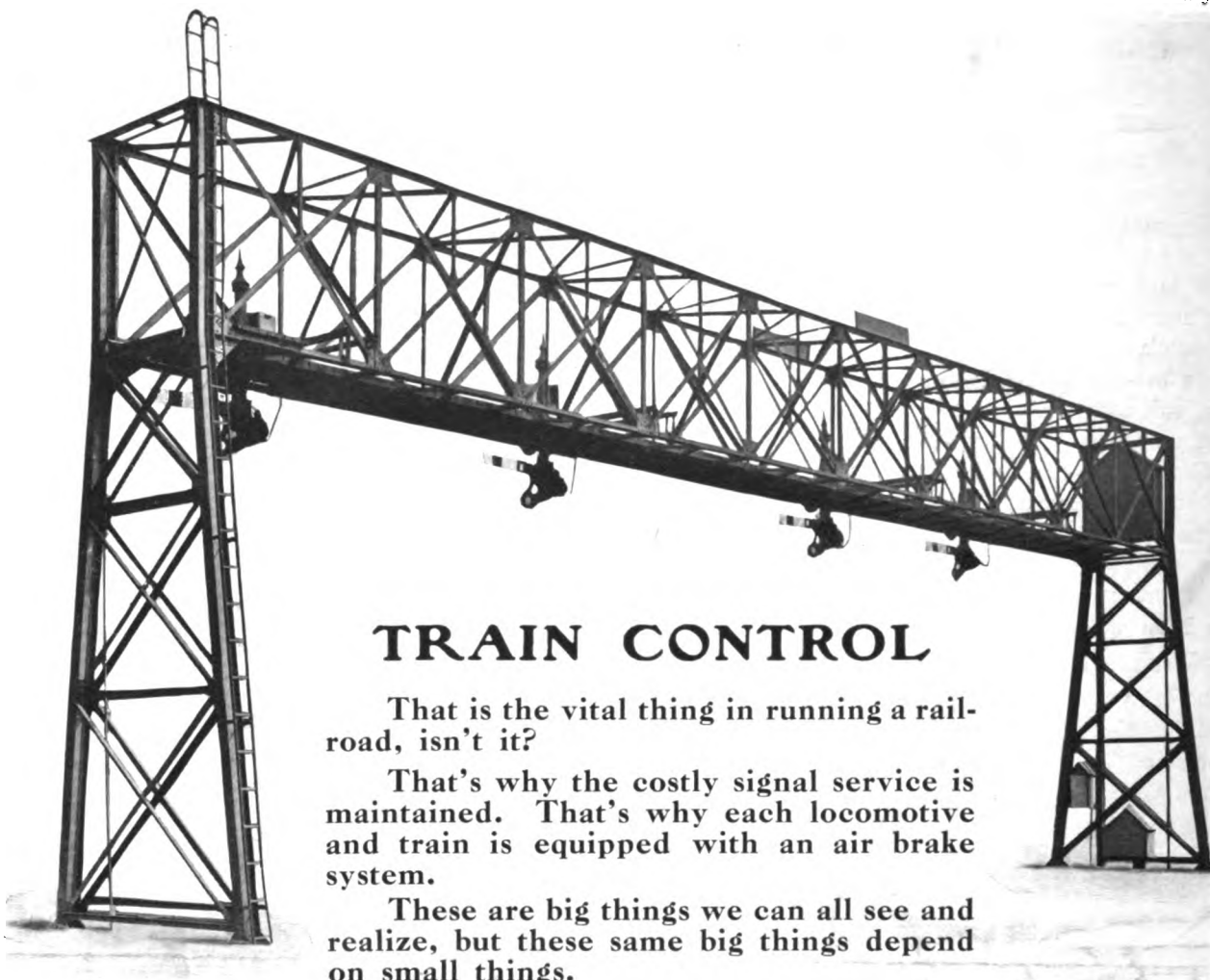
The Dixon Company manufacture their pencils in so many varieties and qualities that there is no need for any user to be dissatisfied, and therefore we do not hesitate to recommend our pencils as suited to every known use.

In the matter of the finer grades for commercial and artistic work there can be no question as to their superiority.

We have the material, machinery, experience and skill, and if you wish pencils for any particular use they can certainly be supplied.

Hard or soft leads; for rough or fine work; plain or beautifully finished; colored leads in all shades; in fact, the variety is almost limitless. If your stationer cannot supply you, or is in doubt regarding a special grade or shape or finish, do us the favor to let us know your needs and samples and particulars will be promptly and carefully furnished.

DIXON's graphite publications sent free upon request.



TRAIN CONTROL

That is the vital thing in running a railroad, isn't it?

That's why the costly signal service is maintained. That's why each locomotive and train is equipped with an air brake system.

These are big things we can all see and realize, but these same big things depend on small things.

For instance, the air brake system needs lubrication—delicate, sensitive lubrication. That's what

Dixon's Graphite Air Brake Grease

provides; the right degree of delicacy combined with lasting efficiency.

It maintains constant lubrication under all conditions, it keeps triple valves delicately responsive and minimizes undesired quick action.

It is adapted to the entire air brake system: engineer's brake valve, distributing valve, triple valves, angle cocks, brake cylinders and pistons.

This lubricant is used on many of the biggest railroads in the country.

Remember, it helps in train control—and you are interested in this. Will you write our Lubricating Department for some personal information? Perhaps you would like to test this Dixon product.

Joseph Dixon Crucible Co.,
Jersey City, N. J.

GRAPHITE

VOL. XI.

AUGUST, 1909.

No. 8.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

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GENEALOGY, DIXON'S AND OTHERS

Of recent years, it has become quite the proper thing to look up one's ancestors. How much responsibility we may lay at their door is perhaps a debatable question, but oftentimes the search uncovers some interesting matter.

In glancing over a little volume entitled, "Curious Facts," we find that Dixon is an offspring of Richard. Exactly which Richard is not definitely stated. We trust it is the right and proper Richard.

The volume referred to goes on to explain that when the world was young, or rather when its civilized population was small, individuals had single names. As the population in-

creased, however, and intercourse between them grew, it was found desirable to distinguish persons through the use of two or more names. This condition of affairs gave rise to the addition of names not only as a means of obviating the confusion of a great number of like names, but also for the purpose of distinguishing families.

It is not known exactly at what date surnames first came into use, but it is believed to have been in the neighborhood of the year 1000 that they were first officially recognized and used to any extent.

The term surname is said to have been derived from "sire-name" as the first family names were derived from the names of the father. Instead of referring to a man as John, the son of Jacob, in order to distinguish him from John, the son of David, as had long been customary, the appellation was shortened to John, Jacob's son; and this in turn became simply John Jacobson. Similar methods were used in deriving such names as Johnson, Davidson, Benson, Donaldson, Thomson, Peterson, Jameson, Stephenson, etc.

As we all know, Scotch and Irish surnames very frequently include Mc or Mac; the word "mac" (son of) being prefixed to the name of the father. And so we have McArthur, Mac Donald, McHenry and many others.

The old Normans are said to have originated many of their family names in a like manner by prefixing "fitz" to the father's name and so we have Fitz-Hugh, Fitzpatrick, Fitz-

simmons (son of Simon). Fitz is believed to be a corruption of the French word fils, meaning son.

The author states that until recently the Welsh people adhered to the custom of distinguishing a person as the son of his father by the use of the word "ap." Thus, David, the son of Howell, was known as David ap Howell. To this custom we are probably indebted for such names as Pugh, Pritchard and Price, which are simply modifications of ap Hugh, ap Richard, ap Rice.

Dixon, along with Dick, Dickens and Dickinson is the surname which is said to be derived from the Christian name Richard. In like manner from Henry is derived Hawkins, Harris and Harrison. From John comes Jones and Johnson, also Jenkins, Jennings and Jackson. From Arthur we have McArty, Atkins and Atkinson.

We have not room here to follow the author, though it is quite interesting to do so. Many names are shown to be derived from trades, such as Smith, Carpenter, Miller, etc. Names like Hall, Garret, Chambers, are presumed to be derived from the occupations of forefathers who were engaged in the households of nobility; in like manner too, Page, Butler, Steward (Stuart and Stewart), Bailey, etc. Other names are derived from localities such as Kent, Lincoln, Carlisle. Others from places or things, such as Cobb, meaning harbor; Chase, a hunting ground; Beck, a little brook.

Ex-President Roosevelt's name is derived from the Dutch, and means a field of roses.

TO KEEP THE RIMS FREE FROM RUST

Rims should be kept free from rust, to facilitate the removal of the covers when tire trouble occurs. Tire experts agree that powdered graphite and glycerine make the best preparation to apply to wheel rims for the prevention of rust. This is compounded by taking a small quantity of powdered graphite and mixing it with glycerine until it becomes a thick paste, then it can be applied with a brush. Graphite and linseed oil paint is another preparation for this purpose.

—*Bicycling World.*

AN experienced motorist suggests the introduction of graphite into lubricating oil, in the proportion of about a teaspoonful to a pint of oil, claiming that it builds up even the most microscopic irregularities on bearing and wearing surfaces of pistons, rings and cylinders, resulting in better lubrication in cylinders, better compression and a saving of oil. He recommends flake graphite.—*Standard Equipment Catalog.*



ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

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NEW DIXON CATALOG

Of special interest to school people, stationers and supply houses a complete descriptive catalog of the lead pencils, colored crayon pencils, solid colored crayons and rubber erasers, manufactured by the Joseph Dixon Crucible Company, has been prepared for the convenience of all those who are interested in the sale, purchase or use of school supplies. It is designed for the use of local stationers, school supply houses, teachers, superintendents, principals, supervisors, secretaries of school boards, school directors and others interested.

An endeavor has been made to give a clear and comprehensive statement of the various uses for which school pencils are designed, and of the special qualities necessarily inherent in the pencils specially adapted for any particular use. The Index is accurate and full, and will be useful as a guide to the main body of the catalog. For copies of this catalog please address the Philadelphia branch of the Joseph Dixon Crucible Company, 1020 Arch Street, Philadelphia, Pa.

To the Philadelphia Branch of the Dixon Company is due full credit for this very interesting publication, which is more than a catalog of the Dixon Productions. It contains very much interesting information in regard to free-hand drawing and shading, mechanical drawing, writing as a fine art, drawing in color, etc.

The article "Learning to Write," should prove not only interesting but valuable to every teacher of writing. "The Possibilities of School Drawing" is carefully worked out with illustrations in color.

BREADTH OF MIND

It's a great thing to have breadth of mind. It enables one to see in all directions at the same time, and so the complete landscape is viewed and the relative proportions of its features seen in proper relation. The absence of this breadth of view means that some particular thing is apt to be emphasized out of relative importance.

Breadth of view may very naturally carry with it a sense of humor. This is brought to mind by reading *Collier's* department, entitled "Brickbats and Bouquets." Certainly one without a sense of humor could not run such a department along the lines followed by *Collier's*, and the department title is cleverly descriptive. We print a few selections taken at random.

NEW YORK

"After receiving *Collier's*, I have come to the conclusion that it is hardly worth while reading, much less wasting my time on it.

A. DEYOUNG."

ALBUQUERQUE, N. M.

"*Collier's* criticisms are quite often idiotic rather than unfair.

DR. MCNULL."

"What an ideal government we would have if we could abolish Congress and let *Collier's* discharge the functions of the House of Representatives."

—*Sioux City (Ia.), Journal.*

A publication that takes itself too seriously (we all have in mind some one or more that fully meet this definition) could not possibly print such caustic criticism and such sarcastic comment as largely make up the department referred to. By this we do not mean to infer that *Collier's* is not a serious publication, but while it is seriously working for the right, it realizes its own frailty in common with all human nature. It holds up the looking glass to itself—and if we look closely perhaps we can see our own reflection.

GRAPHITE IN AUTO ENGINES

In a report made by a special Graphite Committee and the Technical Committee of the Automobile Club of America, concerning the use of graphite in automobile engines, the following is the summing up:

1. Increases the efficiency of the engine.
2. Decreases the smoke from the exhaust.
3. Decreases the quantity of lubricating oil.
4. Retains compression in cylinders.
5. Causes the engine and gears to run more smoothly.
6. Decreases the liability of burning out bearings.
7. Increases the life of all bearings.

PREVENTING CORROSION OF STEAM MACHINERY

By W. H. WAKEMAN

Chapter XV

The next type of boilers to be considered consists of those in which the tubes are filled with water and the flames and hot gases circulate around them. These may be divided into two classes; vertical and horizontal.

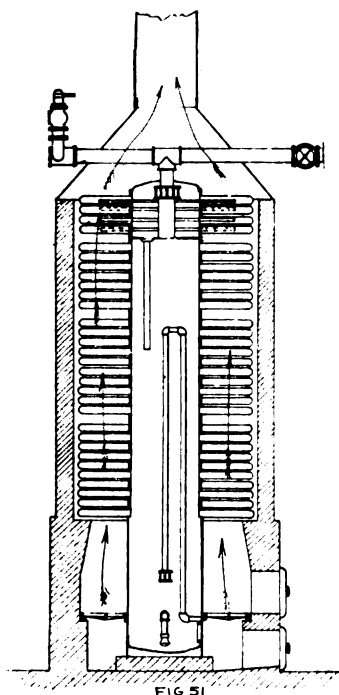


Fig. 51 is a good specimen of the former, as it consists of a central shell standing on one end, with numerous horizontal tubes expanded into it. In this case the four upper rows are steam drying or superheating tubes, while all below them are filled with water which is rapidly evaporated into steam. It is practically impossible to strain this boiler by unequal expansion or contraction, as it is free to move upward, downward or towards either point of the compass horizontally, and to this extent at least, the design is superior.

The central shell which resembles a standpipe, rests on a foundation that is a few inches higher than the floor

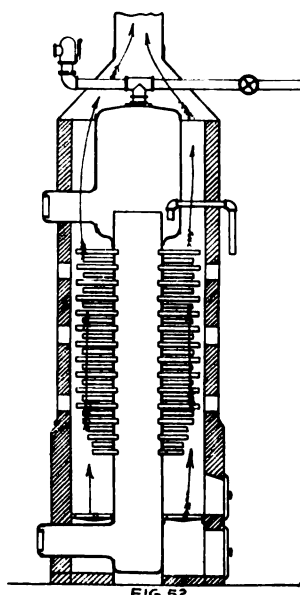
of the ash pit, in order to prevent as far as possible, moisture from collecting with ashes that naturally become piled against this part in every day practise. Such a combination quickly corrodes and weakens the shell at this point, or the water leg as it may properly be called, provided it is not painted with Dixon's Dark Red Silica-Graphite Paint. In cases where corrosion has already commenced its work of destruction, it may be arrested by scraping the parts clean and then applying this paint and allowing it to dry thoroughly before ashes are piled up against it.

The grate surrounds this shell at the proper height to admit of conveniently handling the fire, not only when sprinkling on fresh fuel, but also when cleaning the fire, which is a laborious and disagreeable job.

The interior space below the level of the grate forms a natural mud drum into which sediment settles where there is little or no circulation of water, out of which a part of it can be blown by opening the blow-off valve, while the remainder can be removed through a manhole provided for that purpose, when there is a good chance to allow the whole structure to cool. The trouble with all such apparently good designs of this kind is that corrosion begins as soon as the boiler is put into service (although it may not be severe enough to alarm the engineer for several months), and unless something is done to arrest its action, expensive repairs must be made. I have used common soda ash for this purpose and find it very effective.

The upper portion of this shell or stand pipe is bored so full of holes that it appears to be greatly weakened, but they seldom or never fail, even when carrying a heavy pressure. Into each one of these holes a tube is expanded, the outer end of which has been closed by welding. As these tubes are filled with water which is rapidly evaporated in practise, sediment collects in them, and the intelligent engineer seeks to remove this sediment before it is converted into hard scale. When a fireman is sent up into this standpipe to perform a part of the cleaning process, taking with him a rubber hose, on the end of which is a suitable nozzle that he inserts in one after another of these tubes, while a helper turns on water pressure, the tubes are well washed out, and the fireman is sure to think that he is "having the time of his life."

When hard scale does collect in them, it becomes necessary to use something stronger than water, to remove it, consequently kerosene oil is sometimes used for this purpose. Armed with a squirt gun, the fireman gives each tube a dose and receives full benefit of the "back action" process, therefore if he is not a reliable man this disagreeable work will be slighted.



Each tube in the four upper rows is fitted with a smaller internal perforated tube which connects with the main steam pipe, thus drawing steam from these tubes instead of taking it directly from the central shell. This insures dry steam at all times.

Fig. 52 is of similar design, but is fitted with what is practically a live steam heater and purifier in the upper part of the standpipe. Soon after the feed water is delivered into this space, it is raised to the temperature of the steam under full pressure, thus causing it to deposit the scale making impurities that it contains where they can be removed through the manhole shown.

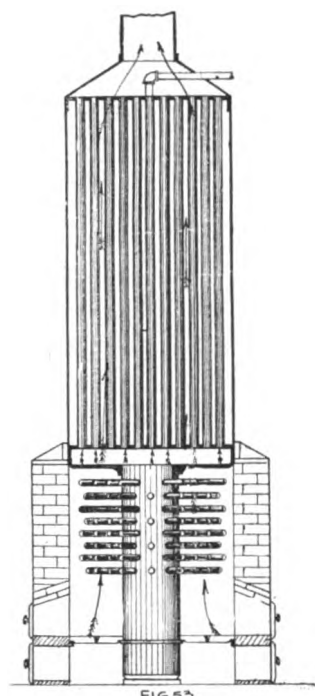
The feed water overflows from this upper extension and passes through a pipe not shown, into the lower extension of the standpipe, where the sediment it contains has a chance to settle, from whence it can be taken out as often as necessary.

Fig. 53 is fitted with a short standpipe into which water tubes are expanded as above described, and above these there is a large vertical shell into the heads of which fire tubes are expanded, thus presenting a unique combination of water and fire tubes.

Fig. 54 illustrates another boiler fitted with a large standpipe into which water tubes are expanded, but both ends are connected into the central shell. These tubes are bent as shown, so that one end is about eighteen inches above the other, thus promoting rapid circulation as the hot gases surround them, and they are kept very hot.

This boiler is one of the most rapid steamers that is known to modern engineering, but that fact does not make it economical in the use of coal. The secret of the rapid steaming

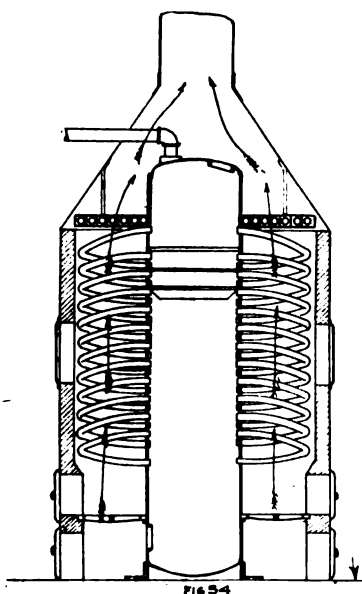
qualifications of all such boilers is found in the fact that they hold but little water, consequently a working pressure of steam can be raised from cold water in a few minutes, but on the other hand the pressure will fall just as rapidly after the fire is banked, allowed to burn out, or withdrawn for any purpose.



moved from either extreme is probably the best in every day service.

It is customary to give all steam generators which contain water tubes the title of "safety boilers," and the first time that my attention was called to the fact that a "safety boiler" is not always safe, was when visiting the office of a boiler insurance company, where I was shown a ruptured tube which caused enough damage to make it necessary for this company to pay \$5,000 to settle the claim.

Fig. 55 is a boiler that contains both water and fire tubes, and is very properly termed a "safety boiler." The feed water enters the water tubes directly over the grate, and after circulating through them it passes into the water space between an inner and an outer shell, that is perforated by fire tubes passing from one shell to the other. The products of combustion rise from the furnace and envelop the water tubes, then pass into a combustion chamber that is covered with a brick arch which turns them outward through the first set of fire tubes to an outer flue, then they are turned inward through



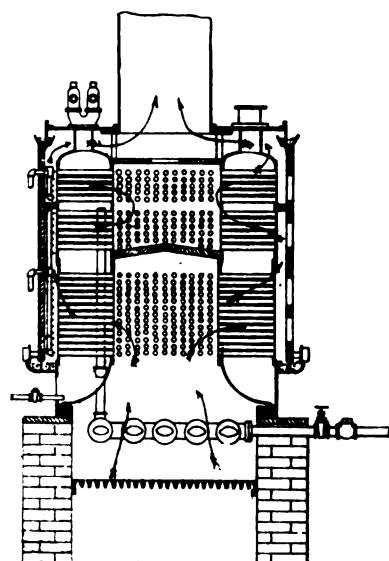
the second set and outward through the third, thence going to the stack. This affords an ample opportunity for all heat to be extracted from these gases, except what is needed to create good draft.

Every boiler that is sold to a steam user should be guaranteed to evaporate a certain weight of water for each pound of a stated kind of coal burned under it, and after it is installed, and before it is paid for, a thorough test should be made by the engineer in charge, if he is competent to do it. If not, another engineer who can do it correctly should be employed to find out just what the evaporation is and report accordingly. This does not necessarily mean that the boiler which shows the highest results from such a test ought to be purchased in every case, because it is quite possible for the benefits derived from a high rate of evaporation to be overbalanced by the need of frequent repairs, as these are not only expensive directly, but the indirect expense is often very heavy, especially if the shop or factory must be shut down for this purpose. The fact that the neighbor of a prospective steam user has a boiler that is always ready for business, and gives but little trouble in service, has secured many orders for the same kind of a boiler, regardless of the superior results secured with other kinds, which have earned a bad name on account of the need of frequent repairs.

A certain inspector was telling of the disadvantage of brick set boilers because the furnaces must be rebuilt frequently. I called his attention to the fact that the five brick set boilers in my plant had never cost their owners a dollar for repairs, except to rebuild the furnaces, and some of them had been used four years without needing the services of a mason. This did not change his opinion on the subject because much of his experience had been with men who did not take good care of their boilers (or anything else in their plants), hence expensive repairs were frequently necessary. This shows plainly that it is not fair to charge expenses to a boiler when really they ought to be written against the man in charge of the plant, but this has happened many times, not only where boilers are concerned, but with other kinds of machinery.

(To be Continued.)

DIXON'S Ticonderoga Flake Graphite has solved for engineers and machinists so many problems of lubrication that they have come to depend upon it at all times. Bear in mind, however, that it is better to use too little rather than too much, as flake graphite is a solid substance. In cooling a hot bearing begin with a very, very little and with patience you will succeed in the cooling operation.



THE DUMB THAT HEAR

We all are more or less familiar with the ordinary means of communication between the deaf and dumb—the pencil and the fingers. Many of us know of the lip language, but very few of us know of the keen sense of the dumb to the “feel” of vibration.

Dr. Enoch Currier has a remarkable theory that the deaf can be taught to hear through vibration. He believes he can develop the perception of hearing, although the ears are deaf to sound. He holds that music will ultimately open the ears of the deaf, and that through music alone is salvation for the dumb.

Dr. Thomas Fox, one of the faculty of the New York Institution for the Instruction of the Deaf and Dumb, at a banquet lately given by the Protean Society of the institution named, said:

“Dr. Currier believes that, once the sense of harmony has been repaired, the deaf will be able to hear things of which the normal man has no knowledge. For instance, in proof of Dr. Currier’s theory, I will stamp my foot and you will see the result.”

He did so as he spoke and the boys, who had been absorbed in their language of signs and gesticulations, stopped and looked up, startled out of their conversation.

“They do not hear the sound, they feel it,” Dr. Fox explained, “and it is vibration that apprises them of the approach of anyone. Even were one to wear muffled slippers, the deaf mute would feel his presence in the room, if he entered ever so stealthily.”

At that moment the musicians, Bernard Mole and De Bernardis, especially engaged for the banquet, struck up the “Merry Widow” waltz and the boys leaped to their feet. It was wonderful to watch them glide and keep time, guided by vibration alone. The music changed to the quicker, more jerky time of the two-step, but the boys swung into the half time easily and gracefully.

CAN USE NOTHING BUT DIXON’S AXLE GREASE

MESOPOTAMIA, OHIO, May 24th, 1909.

Joseph Dixon Crucible Company.

GENTLEMEN:—

Please to send me by freight to Lockwood, Ohio, two cases of Dixon’s Graphite Axle Grease in cans to retail at fifteen cents per can. Also two cases of this axle grease to retail at twenty-five cents each. I have had this grease but am entirely out now. Have always got it before through your man for this territory who comes here once a year with his pencil wagon, but as I have a few here that think they can use nothing else, I am obliged to order direct.

Yours respectfully,

(Signed) B. G. HEIGES, Hardware Dealer.

A WRITER in Albany says:

“Please send me one crucible No. 6 to melt copper in. My cover is all right, so will not need one this time. I bought one crucible of you one year ago, and have had it in the fire at least seventy-five times at over 1200 degrees of heat, and it is just getting porous, and therefore I need a new one. The Dixon Crucibles are all right.”

OUR BILLION DOLLAR SMILE

An article under the above heading appeared a little while back in *Success Magazine* and was written by Mr. Glenmore Davis.

A number of very interesting facts were brought out. Among others it was stated that during the theatrical and operatic seasons in New York City alone that \$15,000,000 would pass into the box office. Two months before the Metropolitan Opera House opened for the past season, \$650,000 had been paid in by subscribers, and Mr. Hammerstein was stated to have collected \$247,000 in Philadelphia towards the year’s support of his Quaker City house. At the time mentioned, the article furthermore said, the Hippodrome was taking in \$11,000 a day.

The eighty-six play houses in New York City bring yearly rentals from between \$15,000 to \$195,000.

The average pay for the playwright runs about five per cent of the gross receipts up to \$4,000 a week. Seven per cent when between \$4,000 and \$8,000, and ten per cent when it runs \$8,000 a week or over. The stage director’s salary is given at \$7,500 a year, and the press agent gets \$6,000. Actresses’ and actors’ salaries are stated as ranging from \$40 to \$500 a week.

“Floradora” made \$630,000 in three years. The Merry Widow has made \$2,000,000 for its producers, and \$400,000 for the composer.

Along Broadway and Sixth Avenue there are said to be forty establishments making or selling grease paints, costumes, etc. Down on Twenty-eighth Street a dozen publishing houses grind out new song “hits” daily.

The moving picture wave is indicated by the fact that there are 6,000 individual moving picture exhibition houses in the United States. Nine firms make films which furnish the material for 4,500,000 performances during the season. Thousands of men and machinists and millions of dollars are represented in this business.

The circuses are another item in our Billion Dollar Smile, the article stating that there are a score of big and little tent shows operating between the Atlantic and Pacific from March to November, and that it costs thousands of dollars a day to keep a circus on the road.

Luna Park is described as the greatest amusement park in existence and it is stated that it cost \$2,500,000 to build, and the weekly expense of running it amounts to about \$26,000.

**Rub Dixon’s Motor Graphite on
the rims of your auto wheels. Rub
it in well, and the rims will not rust
and the rubber shoe will not stick.**

**Joseph Dixon Crucible Co.,
Jersey City, N. J.**

CARE OF THE GAS ENGINE

L. H. SNYDER

The gas engine should give good satisfaction if it is carefully looked after the same as any other piece of machinery. We often wonder why it is that some of our neighbors seem to have better luck than we, why it is that their buildings are in better condition, why they have better machinery and seem to prosper better generally.

It is often found that they are frugal in small things; for instance, after getting through with a plow the sheave is carefully greased and isn't left out in the rain; the plow not dropped just where the plowing was finished, but is put away carefully in the shed and is ready for use; and the next time it is wanted, it is not weather-beaten, rusty, warped and started to the scrap pile.

Now concerning the gas engine, treat it humanly, don't put it in a place where the rain will beat on it or the first thaw will drench it with water. The weather may turn cold and there will be a hard freeze, to say nothing about the dirty mess and the rusty parts.

The writer knows that sometimes there are many jobs which seem to demand our attention all at the same time and in the hurry we overlook our oil cups, with the result that the bearings seize or the babbit metal runs. Always make it a point to see that the oil cups are turned off and filled, when you shut down, then they are always ready for use. It soon will become a habit to do this and to open them in starting. For this reason the writer prefers an engine which has grease cups rather than oil, because the grease will be used as needed and there is not the danger of going away and leaving the lubricators open which means so much oil wasted, fire risk increased and the cups run dry.

The cooling water should be adjusted so that the discharge is at a temperature of about 200° F. for the highest efficiency, and in the winter, as an extra precaution, would advise drawing all of the water out of the tanks as an insurance against a cracked cylinder. Alcohol is used as an anti-freezing solution, but even if an anti-freezing solution is used, would go to the extra trouble of drawing out the water, especially if alcohol is used, as it will evaporate in time.

WHY WON'T THE GAS ENGINE START?

What makes one more fluent and forgetful of the doting mother's early training than when the gas engine won't go, or will give only one or two explosions. The vocabulary is exhausted, new words are coined, but nothing doing. It is usually found that the failure to start may be one of the following causes:—

First—There is no gasoline in the fuel tank.

Second—No spark, weak batteries, loose or broken connections.

Third—Excessive back pressure or clogged exhaust.

Fourth—The firing apparatus not working properly.

Fifth—In winter, when the fuel tank is outside, and it should always be there as a precaution against fire, it may be found that the gasoline is too cold to vaporize and it will be necessary to warm the carburetor by wrapping hot cloths around it; never use an open flame.

Sixth—The mixture may be either too strong or too weak.

The writer believes that the usual failure to start may be attributed to one of the six conditions mentioned above.

In his article in the January issue of this paper a case was cited where the engine would not start because the oil cup leading to the cylinder was not open and there was no oil seal between the piston and cylinder, consequently no compression; and it was pointed out how general lubrication could be very much improved by the use of fine flake graphite known as No. 2, and that the same could be fed to the cylinders by means of a "bug gun," removing the spark plug and squirting a little graphite into the cylinder through the aperture.

There also has come on to the market a special gravity graphite and oil lubricator which feeds a mixture of graphite and oil direct to the cylinders, thus insuring better lubrication, more power and smoother running.

In this connection, it might be well to call attention to the many advantages of flake graphite as a lubricant. A metal surface, no matter how well polished, will always show under a strong microscope many irregularities. It is these irregularities, scraping one over another, and the constant crumbling away, which is productive of hot and cut bearings. Flake graphite fills up all these irregularities, building up the low spots and forming over all a thin, tough, veneer-like coating of marvelous smoothness, and if for any reason the lubricant should fail, there is graphite-to-graphite contact instead of metal-to-metal, and the parts may be in contact for a long time without danger of their seizing or cutting.

—*Gas Review.*

BURNT MONEY

The above is the title of an article that appeared in a recent issue of *Everybody's Magazine*. It was prepared by Samuel Hopkins Adams and went on to explain the careless attitude of America toward fire and its possible dire results.

Among other points, it develops how very few of the so-called fire-proof buildings are in reality fire-proof. It seems that municipalities put a direct impediment in the way of owners who would wish to make their buildings actually fire-proof by greatly increasing taxes on such buildings.

A table is given showing the cost of "big fires" in the United States during a period of about seventy-five years.

1835.....	New York.....	\$ 17,500,000
1851.....	St. Louis.....	15,000,000
1861.....	Charleston.....	10,000,000
1871.....	Chicago.....	165,000,000
1872.....	Boston.....	70,000,000
1901.....	Jacksonville.....	10,000,000
1904.....	Baltimore.....	54,000,000
1906.....	San Francisco.....	350,000,000

Joseph Dixon Crucible Company.

DEAR SIR:—

Please ship me by P. R. R. freight ten (10) pounds No. 4 Dixon's Graphite Cup Grease. I am not ordering a larger quantity, as I fear it will increase horsepower so much that I cannot use it.

Enclosed find check for \$2.00.

Yours truly,



DIXON'S EXHIBIT AT ATLANTIC CITY

Atlantic City is the biggest pleasure city on the Atlantic Coast. The big convention month at Atlantic City is June, and the Master Mechanics' and Master Car Builders' Convention is considered the best. The one just held this June was larger than ever.

The Joseph Dixon Crucible Company's space is shown in the picture. The Paint Department and the Department of Lubricants were represented.

One picture in the exhibition showed the end of a car painted with common red paint after eighteen months of service. Another showed the surface of a car painted with Dixon's Silica-Graphite Steel Car Paint after the same term of service, the flexibility and toughness of the latter being very clearly shown by the unbroken film of paint on distorted stakes.

Dixon's Steel Car Paint, whose pigments are silica and graphite, has proved itself to be an efficient and lasting protective coating. This value is due to the inertness of its pigments and the flexibility and elasticity of the coating even after it has dried.

A DAILY paper pays generous tribute to the power of widows to charm the sterner sex and says the stinging ridicule of the widow, particularly if she be young and fascinating, is pure bluff on the part of men who, deep down in their hearts, know the utter futility of resistance when an enterprising widow makes her plans and sets her cap.

Although Mr. Weller said to his dutiful son Samuel: "Beware of the widders," yet, perhaps the widow is the most

sensible wife a man can take—the wife most adapted for human nature's daily food—as having been a wife before, she is already versed in the ways of man, and learned in the gentle art of "managing" husbands. She brings to her new husband the fruits of experience and belongs to that class known as skilled persons.

There are no surprises for her in the masculine psychology, no bewildering discoveries to make. Like the old English dowager, she knows how "to feed the brute," and generally knows him by heart. She is an expert, while her rivals are amateurs or only learning. She has mastered the masculine paradox, and when she goes for a man he may as well make up his mind to pay the millinery bills.

INDISPUTABLE

The teacher had found a lead pencil on the floor of the school-room.

"Children," she asked, holding it up, "does this belong to any of you?"

For several seconds there was no answer. Then a little girl timidly raised her hand.

"Is it yours, Bessie?" asked the teacher.

"Yes'm."

"You are sure of it, are you? How do you recognize it?"

"I don't like to tell."

"But you will have to tell, or I can't let you have it."

"I—I recognize it, teacher, by the way it's sharpened. If it wasn't sure enough mine I'd be mighty clear of owin' up to such a job as that."

Bessie got her pencil.

—Chicago Tribune.

MIRACLE OF THE MODERN PRESS

We printed not long ago a picture of the Philadelphia Bulletin Building. We have before us now a booklet gotten out by the *Bulletin* which gives some very interesting facts with reference to the building and the newspaper. If Gutenberg could again come to earth and see plain white paper in immense rolls go into one end of the machine and come out at the other, a sixteen page newspaper, printed, folded, pasted and counted, he would probably consider it miraculous.

Some further facts concerning the equipment of the modern newspaper as described in the *Bulletin* book, are given.

"By the pressing of an electric push-button, the machine presses in the *Bulletin* pressroom are controlled. The press cylinders can be moved a fraction of an inch or revolved at full or anyone of thirty different speed velocities. Every machine, printing press, linotype, etc., used in the mechanical processes of producing the finished copy of the *Bulletin* is operated by an individual electric motor, all controlled simply by push-buttons.

"There is over a mile of brass tubing in the building, through which is operated a complete pneumatic delivery system connecting all departments throughout the building.

"Equipped with ten Hoe sextuple web perfecting presses, the pressroom of the *Bulletin* is the largest in the State of Pennsylvania, and has the marvelous capacity of producing about a quarter million sixteen to twenty-four page copies of the *Bulletin* an hour. Each press contains about 20,000 integral parts. Anyone of the *Bulletin's* presses consumes from twenty-five to thirty miles of paper an hour when working at full capacity; the rolls measuring about five miles in length and weighing more than half a ton each."

CYLINDER OIL CONSUMPTION REDUCED

From Three Quarts a Day to a Pint

From time to time we have printed articles descriptive of different graphite lubricators. The Comstock Engine Company recommend the use of Dixon's Ticonderoga Flake Graphite in all their literature, and we are reproducing this article to show how it is possible to cut down the quantity of oil consumed very perceptibly. We have attached a Comstock Lubricator to the oiler on our Corliss engine, and have found that Mr. Taylor's statements are borne out.

Comstock Engine Company,
Brooklyn, N. Y.

GENTLEMEN:—

Please send us two more of your steam cylinder graphite cups for use on our Ball & Wood engines.

Our experience with the one you furnished is very satisfactory. For sometime one of our Ball & Wood engines gave us trouble, acting as though not properly lubricated, although we used about three quarts of cylinder oil a day.

Since putting your graphite cup on, we have reduced the oil consumption to less than a pint a day, and the engine is running smoothly and quietly.

We shall be glad to recommend your cups.

Very truly yours,
(Signed) JOHN F. TAYLOR,
Superintendent.

KEEP COOL

August is already here. Perhaps one fact will help to keep you cool. It is statistical, stable as granite, and cold as an iceberg. It is this: Both the death-rate and the disease-rate in our modern cities for July and August, instead of being above the average for the year, are distinctly below it. They are from twenty to thirty per cent below that for the late winter and the early spring months. Sunstroke, dysentery, and the whole brood of tropical diseases are not one-tenth as deadly as tuberculosis and pneumonia. The actual death-rate by sunstroke, for instance, in the United States is about one-twentieth of that for measles. The general death-rate from nearly all diseases, and at all ages, shows a marked decline during the summer, with the single exception of intestinal disturbances in children under five. The only real danger to health in summer is not heat directly, but its secondary effect on food. The one serious cause of summer slaughter of children is milk that is spoiled or dirty. If adults will be careful to avoid eating or drinking anything which is tainted, they will avoid eight-tenths of "summer sickness," and also of much depression and discomfort usually charged against the heat. It is when partially spoiled, or when infected with dust, or with the disease germs carried by the ever-present fly, that food does its deadly work. Wage ceaseless war against the fly, eat a moderate amount of clean and wholesome food, and don't be too much alarmed by the newspaper habit of attributing so many summer deaths to heat. Drink plenty of water without ice, and don't worry about the temperature. Remember that in the so-called dog days fewer dogs go mad than in other portions of the year.—*Collier's*, 1908.



DIXON'S PLUMBAGO CRUCIBLES

Uniformity of excellence and suitability for every general and special requirement of the melter of metals, have kept Dixon's Plumbago Crucibles the world's standard for over eighty years.

Dixon's Crucibles came upon the market in 1827, when Joseph Dixon made the first plumbago crucible ever sold. The Joseph Dixon Crucible Company has steadily maintained its position as the world's foremost producer of the best crucibles, adapted for every general and special requirement of metal melting.

IN REPLACING the gland of a water circulating pump use plenty of graphite with the packing. The spindle is seldom sufficiently lubricated and the graphite will go a long way toward remedying this.—*Motor Field*.

PERHAPS 'T WAS DIXON'S "SLICK"

In a recent issue of the *Phillistine*, we find a description of Elbert Hubbard's visit to "Shoomakers, on Pennsylvania Avenue, Washington, which is in the district of Columbia." This is described as furnishing various vintages and being furnished in a style popular many decades ago.

So the prelude leads up to a climax which we repeat in original form.

"Then we resume our seats around the stove and the low tones of a low-down persiflage is resumed, only to be broken in upon by Champ Clark who asks me for my autograph. Some one hands me a pencil, I try to write—and behold it is one of those bink pencils, and the effort costs me drinks for the house."

Without referring to Webster, we are unable to give the precise definition of bink. To the suspicious, it might suggest contempt, though this description was given under the impulse of the moment and, besides, we seem to remember Fra Elbertus telling us that his mind is subject to change without notice.

Dixon's "Slick" Pencil was inspired by the first day of April. It looks ingenuous enough, but when one tries to write with it—well, it doesn't, that's all. You will have to get one and try it to secure the precise effect, just as our friend from East Aurora did.

AN EXPERT'S OPINION

Professor Charles F. Mabery, of the Case School of Applied Science, says:

"The importance of the general use of graphite in lubrication in the world-wide saving of power cannot be estimated, also its possible prolongation of the natural supply of petroleum."

THE springs of a car very seldom receive the attention that they should. Yet upon the action of them the smooth running of a car depends to a considerable extent. The correct way of insuring the free working of the leaves is to periodically (say twice a year) take the springs down and separate the leaves. Each leaf should then be well brushed with a wire brush—a wire file card is the most suitable—in order to remove the rust which will invariably be found on it. When the rust has been removed pure graphite should be thoroughly brushed on the leaves. A little pure mineral lubricating oil may be added to the graphite, but only in just sufficient quantity to make same adhesive. This brushing must be thoroughly and vigorously done, when all the blades can be assembled again and the spring built up and replaced. If this is done thoroughly and vigorously, the process will be found well worth trying.

—*The Auto Bulletin*.

HINT ON PIPE FITTING

In screwing pipe fittings together, says *Gas Review*, spread a thick mixture of graphite and oil on the threads. This will help make the joints steam or water tight. White lead is used when the pipe is not to be taken apart again. It hardens, while the graphite does not, and makes it almost impossible to unscrew the pipe fittings when they have been connected for a long time.



Old-Timer Talks No. 3

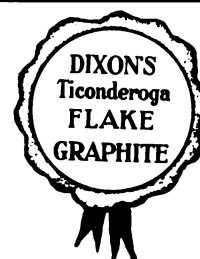
Ever see a bearing under a powerful microscope? Well, its just full of little hills and dales—feels smooth but it ain't.

Course, oil keeps these projections apart more or less, but every little while they dig into each other. Then wear occurs and energy is wasted. When you add a little Dixon's Flake Graphite, it spreads over the friction surfaces—a little here, more there if it is needed—until the bearing is really smooth.

Now, there's as much difference between various graphites as there is between men. Those Dixon people produce a pure, thin flake. Being in flakes it lies flat and hugs the metal close, being thin it covers the most surface, being pure it is free from grit.

Did you send for that free sample yet?

Joseph Dixon Crucible Co.
Jersey City, N. J.



REMOVING CORRODED NUTS

It is said that the removal of corroded nuts may be readily accomplished by first heating the nuts with a pair of pincers, the jaws of which have been raised to a red heat and then applied to the nut.

The application of heat to the nut has both a desolving action on the salts forming the rust, and an expanding action on the nut. A little kerosene applied to the thread before an attempt is made to remove the nut, also facilitates the removal.

On the principle that an ounce of prevention is better than a pound of cure, why not prevent the corroding of all nuts by the use of graphite? Dixon's Pipe-Joint and Thread Compound is an already prepared article for all threaded connections. When Dixon's Compound is used, joints that for years have been exposed to the most trying conditions have been easily opened and found free from any corrosion.

Dixon's Flake Graphite and oil may be used in place of the compound if not convenient to obtain the compound. There is no use ruining a good pair of pincers by heating them red hot, except in dire necessity.

HINTS FOR NEW YORK SIGHT-SEERS

New York City extends north and south, with the East River on the east, and the Hudson, or North River, on the west.

Broadway runs about the middle of the city, until it reaches 14th Street, where it turns westward and runs diagonally across Fifth, Sixth, Seventh and the other avenues on the West Side. At Broadway and 42nd Street is Times Square, marked by the white tower of the Times Building; at Broadway and 34th Street is Herald Square, marked by the Herald Building, with its owls; Broadway and 23rd Street is marked by the Flatiron Building; south of Union Square Broadway runs south past City Hall to the Battery.

Sixth Avenue is the paradise of the big department stores, from 35th Street to the cheaper houses on 14th Street; 23d Street west of Broadway is a shopping district given over to high-class specialties; the same is true of Broadway between Madison and Union Squares, and on Fifth Avenue, above Madison Square, the most costly luxuries are sold.

On Sixth Avenue, from 40th to 59th Street, in the heart of the studio region, artists foregather, and one of their haunts is the Café des Beaux Arts, a restaurant thoroughly French in the best sense of the word. Cheaper French and Italian restaurants west of Broadway near 25th Street, and in the neighborhood of Washington Square, offer a good table d'hôte dinner with wine for fifty cents.

Take the Subway or the elevated roads, not the surface cars, if you are in haste.

POINTS OF INTEREST

The Metropolitan Museum of Arts is on the eastern side of Central Park, at the 81st Street entrance. It is half a mile from the elevated railway, but the Fifth Avenue stages and the Park carriages go to the door, while the Fourth, or Madison Avenue cars, pass within one block. Admittance is free, except Monday and Friday, when twenty-five cents is charged; open Sundays, 1 to 5 p. m. Open Monday and Friday evenings, free.

The Astor Library, on Lafayette Place, founded by John Jacob Astor, in 1849, is the best reference library in the city,

open from 9 a. m. to 9 p. m. The Lenox Library, 70th Street and Fifth Avenue, contains many artistic treasures and rare manuscripts and first editions. The Public Library Building is in course of erection at Fifth Avenue and 42nd Street.

Bronx Park, at South Boulevard and East 182d Street and Pelham Avenue, is reached by the Third Avenue "L" express. Admission free. Closed at sundown.

The Navy Yard, on the south shore of Wallabout Bay, Brooklyn, is open to visitors, and reached by electric cars from the Brooklyn Bridge.

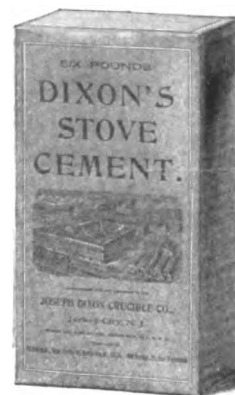
The American Museum of Natural History at Central Park West and 77th Street, is open free except on Monday and Tuesday, when the fee is twenty-five cents.

Of other museums, the most interesting is the collection of the New York Historical Society at Second Avenue and East 11th Street, containing a library, an art gallery, which is one of the largest permanent collections in the country, and one of the finest collections of Egyptian antiquities in the world.

Grant's Tomb is at Riverside Drive and 123d Street.

The Statue of Liberty, on Bedloe's Island, is reached by steamer from the Battery every hour, twenty-five cents round trip. At the Battery may also be seen the Aquarium. Admission free. Open from 10 a. m. to 4 p. m.

—From Dixon's "A Day in New York."



DIXON'S STOVE CEMENT

Dixon's Stove Cement is a mixture of Dixon's Crucible Clay and Graphite, and is an easily-applied repair for worn, cracked or broken firebrick linings of ranges, stoves and furnaces; is equal if not superior to anything of the kind in the market. It is frequently recommended by stove men in place of new linings, as the repair made often outlasts new linings and saves time of stove man and cost of new linings.

It is packed as a dry powder, and should be mixed with just enough water to form a paste. Apply with a knife, smooth off the surfaces and allow it to dry over night. It is put up in different sized packages and costs little.

THERE'S THE RUB

It is easy enough to be pleasant
When life goes along like a song,
But the man worth while is the man who can smile
When the telephone rings and he answers it and says "Hello!"
and the operator says, "What number?" and he says, "The bell rang," and she says, "No, it didn't."

—New York Evening Mail.



DIXON'S LUMBER PENCILS AND CRAYONS

DIXON'S LUMBER PENCILS (BLACK)

Trade No.

- 361—Regular Lumber pencil, $4\frac{3}{4}$ in. long, $\frac{1}{2}$ in. diameter, hexagon, japanned.
 365—Soft, for green lumber, paper covered.
 365½—Very soft, for green lumber, japanned.

DIXON'S COLORED LUMBER CRAYONS

Trade No.

- 495—Hexagon shape; brown; paper covered.
 496— “ “ yellow; “ “
 497— “ “ terra cotta; “ “
 520— “ “ red; “ “
 521— “ “ blue; “ “
 521½— “ “ extra soft blue; “ “
 522— “ “ green; paper “
 523— “ “ white; “ “

Dixon's Lumber Pencils and Crayons are packed one dozen in a box. Six boxes in a carton.

Dixon's Lumber Pencils and crayons are considered the standard.

THE LOG OF A LANDLUBBER

The May issue of the *Gas Review* gives a humorous account of an editor of a town paper (alleged Jersey town, location not identified), who aspired to navigate a motor boat and simultaneously conduct a department in his paper on the gas engine as a pleasure promoter. Knowing absolutely nothing about "moting," his first attempt utterly failed. He was picked up in the middle of the river by a passing launch.

He was fully equal to the occasion, however, when it came to explaining why he failed to successfully operate his boat, and wrote as follows:

"We regret to state that when we started to return home from a trip we were taking in our new gasoline launch last Saturday, the fly flopper gave way, allowing the plunk flopper to fall and break the hickey-pin. This, of course, as any one who knows anything about a naphtha choo-choo boat will readily understand, left the hind end spindle with only the flip-flop to support it, which also dropped off and broke off the water-guzzler. This naturally opened the fluking between the sixth rib of the motor and the filgaster, which also caused trouble. We wish to emphatically state that the report that the accident was caused by feeding too much sarsaparilla in the carburetor, or that it was due to an overindulgence on our part in too much lemon soda, is a tissue of falsehoods, the blackened like appearance of our right eye being caused by

going into the galley way of the coal bunkers in our anxiety to start homeward bound and pulling the coupling pin after the slam bung was broken, which caused the dingus to rise up and swipe us in the optic. Mr. Brown, our esteemed fellow townsman and blacksmith, promises to have the engine fixed up shortly and says that the new hopper choke he is making will prevent a re-occurrence of our previous trouble. The date of our next trip will shortly be announced in these columns."

COLOR FOR THE TROPICS

A Man Rubbed on the Neck and Spine with Dixon's Graphite is Safe from Sunstroke

Investigation, says the *Scientific American*, has shown that the piercing actinic rays of the sun striking the neck and back exercise a highly dangerous effect upon the spinal column and the nerve centers, which react upon the organs of the stomach, promoting such maladies as indigestion, which in turn react upon the brain, and in time completely undermine the physical condition of the body until at last collapse results.

Discriminating Nature has provided the native in the torrid belt with an effective protection against the sun in a skin pigmentation which absorbs the actinic rays, so that their dangerous effects upon the constitution are counteracted. Consequently the native is able to successfully withstand the sun rays which prostrate the white man.

Experiments have proved that if only the natural pigmentation of the native is produced in the clothing of the white man, he experiences no more harmful effects than the black man.

As graphite is as pure and wholesome as charcoal, and as it is in fact one of the forms of carbon the same as charcoal, we respectfully suggest to the doctors and the scientists that they rub the neck and back of the white man with Dixon's Flake Graphite; better yet, rub him all over.

DIXON'S STOVE POLISHES

In 1827, Joseph Dixon commenced the manufacture of stove polish. The Dixon Company still continue to make polishes for stoves, and have on the market at present two kinds, one the old-fashioned cake which is still preferred by many; the other the more modern powdered form. Each represents the best polish of its kind. It produces a brilliant surface with little effort, does not burn red or give off offensive odors, and will "stay with the stove."

PREACHERS AND PRACTITIONERS

Elbert Hubbard claims that the man devoting his attention exclusively to preaching is not the best man to instruct his hearers. It is the man who lives the experience, knowledge of which he is endeavoring to impart, who is best fitted for the work. An article in the February *American Magazine* entitled "Sending a State to College," by Lincoln Steffens, tells how the University of Wisconsin exemplifies this principle in its faculty. Some of the University professors serve in public capacities, for instance: Professor Myer is on the Railroad Commission, and other professors gladly give their assistance to the legislature in the drawing up of bills that will fully meet their purpose and not be open to rejection later by the court on account of some technical weakness.



Midsummer Day's Dream

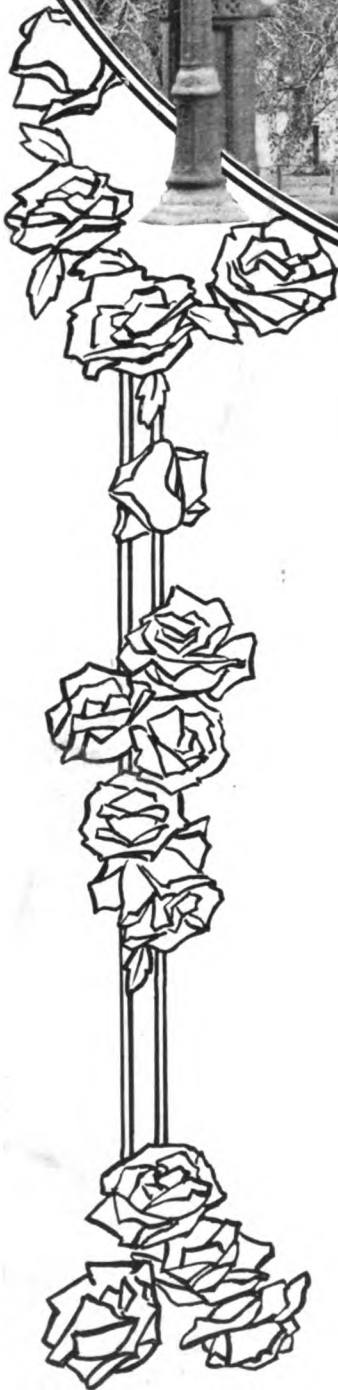
Seems too good to be true, doesn't it? But in a few more months the snow and ice will be with us again. And all exposed steel work will suffer in consequence unless properly protected.

Dixon's Silica-Graphite Paint will provide the proper protection. Being an elastic coating, it withstands normal contraction and expansion of the metal.

As to durability, it has records in all climates under exposure to varying service conditions.

It's about time to take up the fall painting question—write to our Paint Department now.

Joseph Dixon Crucible Company,
Jersey City, N. J.



GRAPHITE

VOL. XI.

SEPTEMBER, 1909.

No. 9.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

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DRAWING AS PART OF AN EDUCATION

By ELBERT HUBBARD

We call the man who cannot read and write "illiterate." He is pointed out and laughed at as one disgraced. "He cannot even read and write!"

The time will shortly come when a person who cannot sketch with pencil, pen or crayon will be regarded as one of very faulty education. Think of a man versed in botany and not able to draw a picture of an oak leaf that you can distinguish from an elm! And what say you of a zoologist who cannot make a picture of a horse that will not also pass for a mule! Then what shall we say of a person who can speak English, French and German, and who has passed high in Greek and Latin,

who cannot express himself in the very first language, the last and universal language of the picture? Hieroglyphics is the first form of writing, but now in our arrogance we think we can skip this stage of our evolution. Nature has given us the hint, but we refuse, so dear is the first step in civilization. Can we leave it out and go unpunished? Dr. G. Stanley Hall says not.

To learn to draw is not so difficult as to learn a new language. Anybody who will apply himself an hour a day for a few weeks can acquire skill sufficient to draw faces. To be a portrait painter is, of course, another thing—this is not for the many. Only one man out of ten thousand who knows grammar can write a strong and vivid story, but if he could not write letters to his friends we would regard him as a defective.

Thackeray could write stories and illustrate them, and he usually illustrated them before he wrote them. Writing to Dickens, Thackeray once said: "The delight of my life is to draw pictures, and I never see a funny face—or a beautiful one—without feeling for my pencil and pad."

The fact that as a people we cannot draw makes us poor critics of art—unappreciative. You must have tried a thing yourself before you know the difficulty of doing it in a masterly way.

To be akin to the artist you must have tried to be an artist yourself. And this great truth is what William Morris had in mind when he made his plea for the education of head, hand and heart.

To have hands that are not trained to obey your brain will yet be regarded as a disgrace. All of our education has been a matter of head, and the body has been the prey of chance. But the hope of the world lies in the fact that educated people are getting awake to the truth that in a manual way we are mostly defective, and from a manual defective to a moral defective is an easy step.

To draw, demands that you shall see—you must know distance, size and weight. To draw, exercises and strengthens the sense of values—and to know values is wisdom. And wisdom is nothing else than the sense of values. He who is absolutely deficient in the sense of values is a fool—men put distance between themselves and folly only as they cultivate the sense of values. The sense is simply knowing a big thing from a little one—an important proposition from a trivial one. A man who does not know values is a quibbler and a fusser.

To teach drawing by correspondence strikes many people as strange, but when the other day I saw a woman of seventy taking her first lesson in drawing I just laughed aloud to see what fun it was for her to follow the straight lines, the parallel lines, the curves and circles and send in her "theme." She was learning the miracle and the mystery of the repeated line, to use a phrase of Whistler.

"Your next lesson will be more difficult," I said. "I hope it will," was the reply. Everybody goes to school nowadays—and should. Even grown-ups are not fully grown—at least, none that I ever saw were. That is the way to teach—lead on by simple stages from the simple to the complex.

—From *S. F. Examiner*, January 21, 1909.

WHAT LACK OF LUBRICATION DOES

Faulty and uncertain lubrication is the parent, nurse, and chief promoter of growth for the scrap heap and for the junk man's prosperity. All experienced engineers know that journal bearings which never run dry scarcely wear at all, because the film of lubricant holds the surfaces apart and prevents metallic contact, hence prevents abrasion of the metal, unless it be from gritty substances having found their way into the lubricant used, or into the bearings, through oil holes or other openings.

The foregoing is taken from the April, 1909, issue of *Motor Print*, and shows where oil fails as a lubricant. As pointed out, the film of lubricant is not of sufficient body to keep the metal surfaces from scraping over each other, and as "preached" many times in GRAPHITE, when Dixon's Pure Flake Lubricating Graphite is used with oils and greases, a graphite-to-graphite contact is had instead of metal-to-metal.



ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

OFFICERS:

President—GEORGE T. SMITH
Vice Pres. and Counsel—WILLIAM H. CORBIN
Treasurer—GEORGE E. LONG
Secretary—HARRY DAILEY

DIRECTORS:

GEORGE T. SMITH	WILLIAM H. CORBIN
GEORGE E. LONG	EDWARD L. YOUNG
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SALESROOMS AND OFFICES:

NEW YORK SALESROOM, 68 Reade Street.
PHILADELPHIA SALESROOM, 1020 Arch Street.
SAN FRANCISCO SALESROOM, 145 Second Street.
CHICAGO OFFICE, 1324 Monadnock Block.
BOSTON OFFICE, 636 John Hancock Building.
PITTSBURG OFFICE, Wabash Terminal Building.
ST. LOUIS OFFICE, 602 Victoria Building.
WASHINGTON, D. C., OFFICE, 814 14th Street, N. W.
BALTIMORE OFFICE, 1005 Union Trust Building.

"TOO MUCH IS PLENTY"

One of the automobile trade papers says about the amount of "stuff" sent in for publication:

"Within the last few days a veiled attempt was actually made to get us to agree to print verbatim all the "publicity copy" that might be furnished, in consideration of an advertising contract. Such proposals are regarded as little short of impudence in well regulated publishing offices.

"We also hear a great deal about doing favors for advertisers. The term itself appears perfectly innocent, as it is eminently proper that the same spirit of courtesy and mutual helpfulness should prevail between advertiser and publisher as between any other classes of business men having dealings together. But when it is used in the sense that a hint from an advertiser should be sufficient to cause either the suppression or insertion of reading matter, it is a most pernicious thing. A paper conducted along such lines is entirely unreliable and an insult to the intelligence of its readers. The idea that the reading pages

are a sort of appendix for booming and jollying advertisers, and that space in them is thrown in with contracts for advertising space, is becoming entirely too prevalent."

That editor was mad and we don't blame him. Very likely he has received some of the Dixon "stuff." Some of the Dixon "stuff" has a little darkey hidden away, but most of it is good meat and some worth a check from the editor.

Editors generally will please put us on record as not wishing or asking any favor on account of being advertisers. We buy their space at the lowest possible price. Sometimes at a price so low they squeal, and we therefore appreciate any reading notices they are willing to give us, and they are free to chuck into the waste basket any of the "stuff" they think savors too strongly of an advertisement or is not of any possible interest to their readers.

As advertisers permit us to say that we believe there are too many trade papers, and we doubt the need of so many.

SANGOR, TEXAS, July 1, 1909.

Editor GRAPHITE.

It has been a long time since I wrote you about graphite (seven years, I think), but I have been using it daily all these years nevertheless. I have had charge of an air compressor for lifting water by the air lift system, for the Gulf, Colorado and Sante Fé R. R. at this place, for the past ten years, and in all that time I have used a mixture of valve oil and graphite in the air cylinder, and today, after ten years use, the air cylinder is in as good condition as the first day it was started ten years ago. The air cylinder has never been rebored in all that time, and the rings in piston are perfectly tight. I have used graphite and oil on other parts of the engine during the past ten years, and the engine is in good condition at the present writing, never being overhauled in that time. I occasionally allow the machine to "inhale" a little dry graphite through the inlet valves.

Yours truly,

A. H. GOFF.

JAPANESE EPIGRAMS ON BUSINESS

To get a large return from men, overlook small faults in them.

One's business ability can be measured by one's borrowing capacity.

There is no mercantile success without fine diplomacy.

The sample, the advertisement and the sign over the store should tell the truth perfectly.

Be careful in hard times and careful when prosperity arrives. Be optimistic, always, in dull times, but conservative when prosperity arrives.

Wealth and happiness are the productions of effort.

—From *System*.

BASE BALL ALTRUISM

Though visitors may win a game,
Let not the thought annoy;
Somewhere each club's a home team;
Somewhere the news brings joy.

—*Exchange*.

PREVENTING CORROSION ON STEAM MACHINERY

By W. H. WAKEMAN

Chapter XVI

The effect of the thickness of boiler plate and tubes on the efficiency of a steam generator needs careful attention at this time, because the exact facts in the case may not fully agree with the general opinion on the subject, which is to the effect that a thin plate is much more efficient than a thick one. On general principles it is admitted that this is true, because a plate three inches thick would not be as economical as a thin one, but when working conditions are approached the difference in results secured is not excessive.

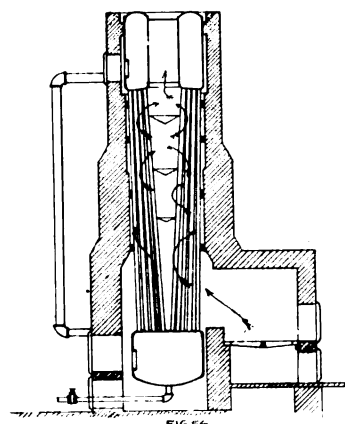
The conclusions arrived at on this subject, which are contained in this chapter, are based on many careful experiments made by Mr. Blechyuden to determine the rate of heat transmission when the thickness of the boiler plate and the temperature of the furnace were varied. In all cases the water was evaporated at 212° Fahrenheit, therefore all are on a common base so far as this point is concerned. Comparisons are made between experiments that were made with the same difference of temperature between the furnace and the water as far as possible, as this condition makes a great difference in results secured.

We will first consider a boiler plate 1.187 inches thick, with a difference of 301° in which 1.47 pounds of water were evaporated per hour for each square foot of heating surface. When the temperature of the furnace was raised until the difference was 3.5 times greater, the evaporation was increased to 16.72 pounds, or eleven times as much as before. This plate was then reduced one inch, bringing it down to .187 inch, with the following result. With a difference in the temperature of 322° Fahrenheit 2.08 pounds were evaporated, showing an increase of forty per cent, and even then a portion of this is due to greater difference in temperature, which is 21°, or seven per cent of the original. When the difference in temperature between the furnace and the water was made 3.5 greater, the evaporation was raised to 25.76 pounds, or about twelve times as much as before. While this may properly be regarded as extreme conditions, it shows that the rate of evaporation increased as the square of the increase in difference in temperature, although the thinner plate showed slightly better results.

The next set of experiments to be considered was under conditions that approach those found in practise, and the conclusions are valuable accordingly. The ordinary return tubular boiler is represented by a plate .375 inch thick where the difference in temperature was 650° Fahrenheit, giving an evaporation of 9.87 pounds of water per square foot of heating surface. When this difference was multiplied by two the rate of evaporation rose to 44.53 pounds, or 4.5 times as much as before. Taking a plate .156 inch thick as representing much of the material that is used in a water tube boiler, we find that with a difference in temperature of 543° Fahrenheit, water was evaporated at the rate of 7.82 pounds per square foot of heating surface per hour. Multiplying the difference by 2.3 raised the rate to 43.9 pounds per hour, showing that it was 5.5 times as much as before. Observation of these results shows that with these thinner plates, when used com-

paratively, the rate of evaporation increases as the square of the rate of increase in the difference of temperature, therefore when these two sets of experiments are compared, it shows that within working conditions a difference in the thickness of boiler plate does not make much difference in the results secured.

Fig. 56 shows a vertical water tube boiler consisting of an upper and a lower drum connected by straight tubes, that may be constructed of thin material if desired. The furnace is separate from the boiler and located in front of it as shown. It is built of fire brick, which become very hot soon after a fire is started, then as the smoke and unconsumed gases from bituminous coal arising on their way to the stack strike this incandescent masonry, they are ignited, and becoming more thoroughly burned, the smoke nuisance is reduced or entirely



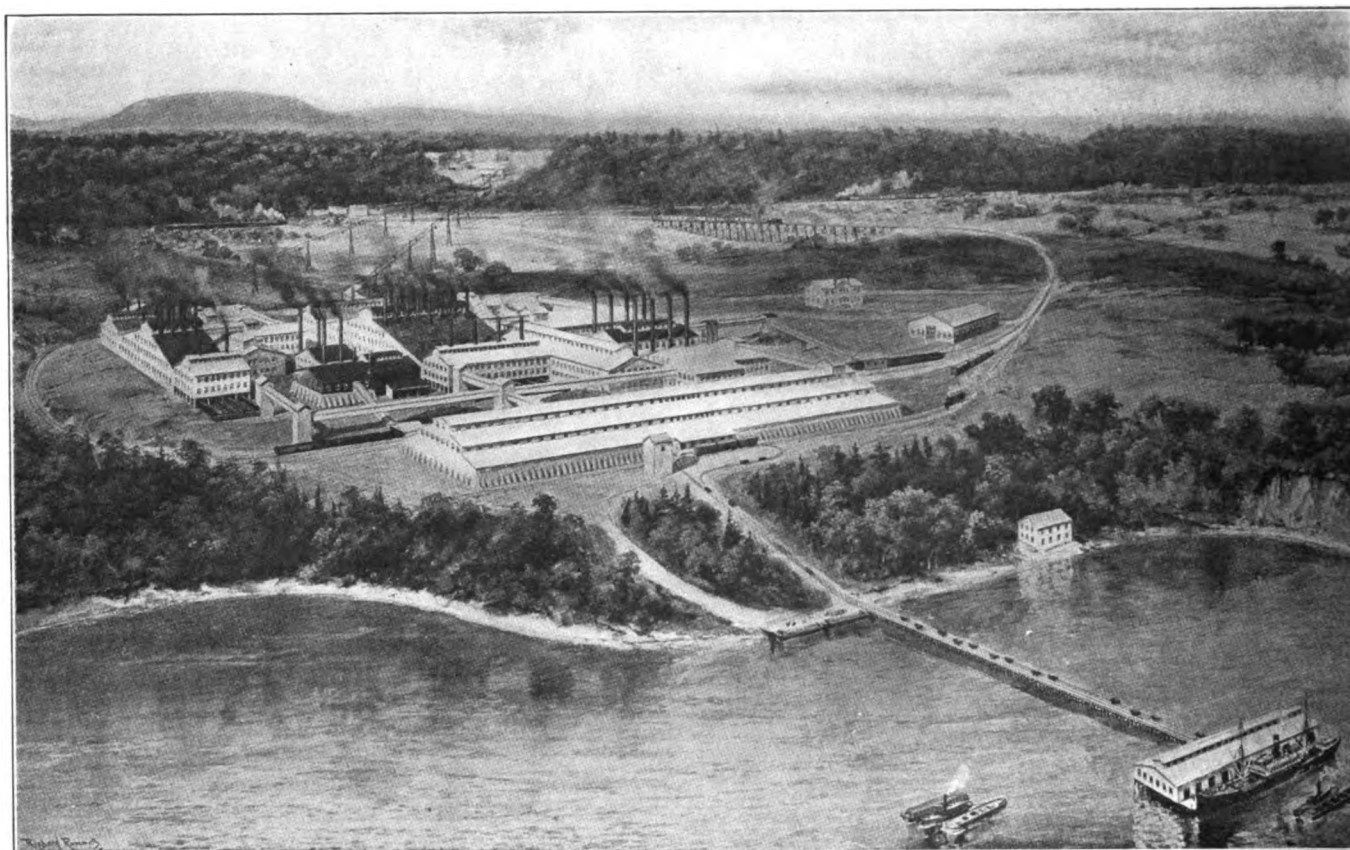
eliminated in some cases. Writers on the subject of smoke always tell us that a large and roomy furnace is an excellent feature in this connection, and this design certainly fills that specification, because the size of the boiler does not limit or control in any way the size of the furnace.

Deflecting plates are located between the tubes as shown, thus forcing the hot gases to travel inward and outward, bringing their course almost at right angles to the tubes until an excellent chance is given for all heat to be absorbed by the water, except what is required to create good draft. It is claimed that with this design of boiler, fitted with a stack fifty feet high, it is possible to obtain a draft strong enough to equal one-half inch of water at the fire. The lower drum is entirely below the fire, hence all sediment finds its way to this point (if not baked on the tubes), and it can be removed through the manhole and cleaning door shown at the left hand. This drum is fitted with a convex head with the blow-off pipe at the center of it, thus facilitating the removal of mud through the blow-off pipe while the boiler is in service.

Dixon's Stove Cement is an excellent article for repairing these brick furnaces, and every engineer should keep a quantity of it on hand for ready use. It may be used as a mortar for laying the fire brick, and it is suitable for patching breaks in furnace walls, jambs and arches.

(To be Continued).

THE first stars and stripes flag was made at 239 Arch Street, Philadelphia. Philadelphia branch of the Joseph Dixon Crucible Company is at 1020 Arch Street.



DESCRIPTION OF THE SEABOARD PORTLAND CEMENT COMPANY'S PLANT

The new plant of the above company is located 105 miles above New York City, in Greene County, on the west bank of the Hudson River, and is connected to the West Shore Railroad with a spur a little over a mile in length.

The property consists of some 700 acres of limestone and clay, of unexcelled quality.

The plant will, when fully completed, as pictured above, have a total capacity of about 7,000 barrels per day, and is being built in three units, the first of which, with a capacity of about 2,500 barrels per day, is now nearing completion. However, all the buildings as completed today, excepting the kiln building, are sufficient in size to take care of 5,000 barrels per day, and the machinery foundations for this increased capacity are already in.

The plant is designed and being constructed according to the most modern and up-to-date cement engineering practise, under the supervision of the Fuller Engineering Company, of Allentown, Pa.

The buildings all have steel superstructure, the sides being covered with expanded metal and cement plaster; the roofs with matched flooring covered with composition roofing, except the entire coal mill and coal storage, which are covered with corrugated iron; likewise the roofs of the kiln building and boiler room.

The plant in part will be driven by cross compound condensing engines; the rest will be driven electrically.

Steam will be generated for power in water tube boilers of the vertical type. These boilers will be equipped with a system which insures economical operation in this department.

The crushing plant, consisting of one No. 10 and two No. 6

gyratory crushers, together with the necessary elevators and conveyors, will be located at the quarry. The crushed material will be transferred to the plant, some 2,700 feet away, with an aerial tramway, this tram having a drop of two per cent. The power generated by loaded buckets going down, will be more than sufficient to bring the empty buckets back, thereby reducing the cost of transportation to a minimum.

The stone and clay will be dried in rotary dryers. The raw materials thus dried will be prepared for the kilns by Krupp Ball Mills and Fuller-Lehigh Pulverizers. The kilns are of the rotary type construction, eight feet in diameter and one-hundred and twenty feet long. Material from the kilns will be taken care of by rotary coolers. The clinker thus cooled will be stored and taken from the clinker storage, and reduced to cement by Fuller-Lehigh Pulverizers.

Coal will be used for burning. This will be prepared by the Matcham Dryers and Fuller-Lehigh Pulverizers.

The machine shop has been equipped with a full complement of tools, sufficient in size to do any work that such a plant would require.

The inexhaustible quantity and excellent quality of the raw materials and their close proximity to the plant; the fact that the plant has been designed and equipped with the most modern and up-to-date machinery by an engineering company with wide experience; together with the fact that the plant is admirably located with reference to large markets and can reach those markets by either rail or water transportation—all of which will be to its advantage in reducing the cost of manufacturing and delivering—should place this plant in a strong position.

The Cambria Steel Company furnished the structural steel work, Dixon's Silica-Graphite Paint being supplied for shop and finishing coats, meeting the entire approval of the engineers.



TICONDEROGA TERCENTENARY

Ticonderoga has just had its tercentenary celebration. This section was a pivotal point during the Revolutionary War and is now one of the Nation's shrines.

War is deservedly becoming less popular each year, but the accomplishment of peace has not deprived Ticonderoga of its interest and value. We show, herewith, a picture taken during the recent celebration that shows the office of the Joseph Dixon Crucible Company at Ticonderoga. The old "military road," built before 1750, crossed over the point now occupied by the Dixon Office. The Dixon Company, in commemoration of the celebration erected a bronze tablet, which can be seen at the left of the view shown, inscribed as follows:

In 1756, the French erected a mill on the river opposite this spot for sawing and preparing timbers used in Fort Carillon, renamed Fort Ticonderoga when captured by General Amherst in 1759.

General Abercromby used the sawmill as his headquarters during the famous battle between the French and the English, July 8, 1758, the day of his disastrous defeat, and the famous old Military Road, over which his army marched, passed on or near this spot and through the present mill yard.

The hill to the Northwest, fortified by the French and called Mill Heights, was again fortified by General Burgoyne in 1777 and called Mount Hope, its present name.

ERECTED JULY 6, 1909,

BY THE

JOSEPH DIXON CRUCIBLE COMPANY,
JERSEY CITY, N. J.

If you are going to connect any piping, remember that Dixon's Pipe-Joint Compound will help mightily. It makes tight joints but never sets.

DIXON'S ST. LOUIS BRANCH

Changes in Office and Manager

On and after September 1st the address of the Joseph Dixon Crucible Company in St. Louis will be 602 Victoria Building, instead of 501 Victoria Building. It will be noted that the offices are in the same building. As the territory covered by the St. Louis office has been greatly enlarged, it became necessary to increase the office facilities. Additional salesmen have been employed, and Mr. H. A. Van Derslice will act as Branch Manager in place of Mr. Samuel Dougherty, resigned.

EASILY REMEDIED

An old lawyer, who is a noted wit, has for a partner another old fellow who is very conservative and straitlaced. Recently the wit remarked to his partner that it was advisable to employ a female stenographer in the office, maintaining that stenographers of that variety were much more satisfactory than males.

But the partner didn't like the idea.

"My dear fellow," he objected, "I don't think it would be proper. It wouldn't do, wouldn't do at all. You see, here I should be in the office, hour after hour every day, quite alone with the young lady, and—"

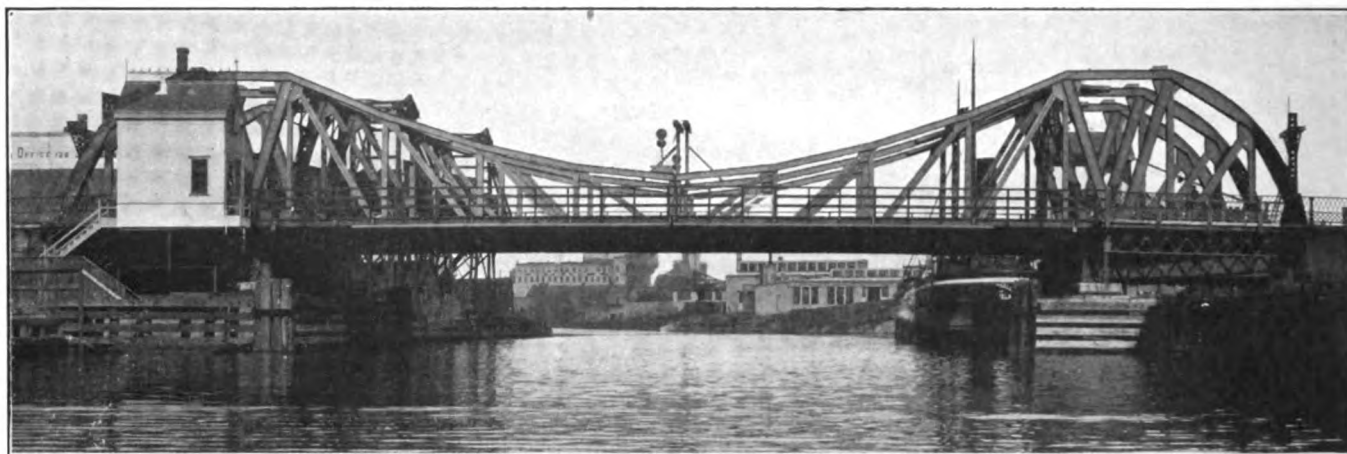
"Well," observed the wit, with a twinkling eye, "couldn't you holler?"

AN OFT-NEEDED KEY

"What is this peculiar key on your typewriter? I never saw it on any before."

"Hist! My own invention. Whenever you can't spell a word, you press this key and it makes a blur."

—*Boston Transcript.*



CLYBOURN PLACE BRIDGE, CHICAGO, ILLS.

The accompanying illustration shows the Clybourn Place Bridge, Chicago, Ills. This bridge was painted in 1902 with Dixon's Silica-Graphite Paint, by the American Bridge Company, the builders. City Bridge Engineer Thomas G. Piehlfeldt, states he is well satisfied with the results given by Dixon's Silica-Graphite Paint on this structure, which has been subjected to severe atmospheric conditions for a period of seven years.

The city of Chicago and the sanitary district of Chicago are now putting in this type, the double or single leaf lift bridge, for all new bridges, and are rapidly replacing the old style swing bridges, with their necessary obstructions to commerce, by this type.

A number of these bridges, built by both the city and sanitary district of Chicago, have had their iron work protected by the use of Dixon's Silica-Graphite Paint with the same satisfactory results as that of the bridge illustrated.

DIXON'S LUMBER CRAYONS FOR TEXTILE MANUFACTURERS

The following letter, which we publish by permission, we believe will give valuable information to many of our readers who may be interested in this special use for our lumber crayons and to whom we would be very glad to give promptly more particulars, if favored with an inquiry.

NEW YORK, July 8th, 1909.

Joseph Dixon Crucible Company,

68 Reade Street, New York.

GENTLEMEN:—

We had the pleasure of a call this morning from Mr. P. H. Meyers, and took up with him the question of the use of your blue lumber crayon No. 521 as a general proposition for cotton mills to use in marking yardage, etc., on the ends of the pieces of cloth as they come from the looms.

As stated to Mr. Meyers, we have had some trouble in the past owing to the fact that the mills have used crayon which does not entirely bleach out.

It will undoubtedly be of interest to you to learn that the Sayles' Bleacheries at Saylesville, R. I., one of the largest finishers of cotton goods, has recommended your blue lumber crayon No. 521 as a crayon that bleaches out without leaving a trace on the finished cloth.

In this connection, we would also say that we are in receipt of a letter from a prominent mill superintendent in Providence, R. I., stating that for a long time the mill had sought a crayon that would bleach out without leaving a stain, and they were pleased to learn of the results that could be obtained through the use of the above mentioned crayon.

We believe that this will be the attitude of the greater number of cotton mills in the large mill centers, both Eastern and Southern, and are gladly giving you this information, thinking that you may care to take this matter up to the end that your crayon may be used exclusively for this class of work.

Yours very truly,

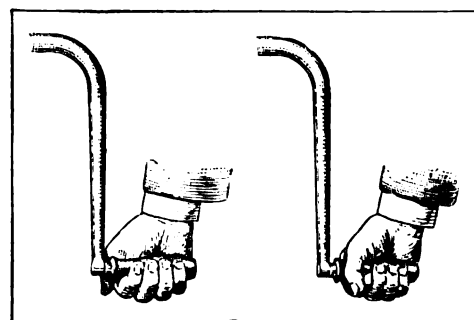
GRINNELL WILLIS & Co.

44 & 46 Leonard Street.

C. W. Dall.

HOW TO GRASP AN AUTOMOBILE STARTING CRANK

The following item is clipped from *Popular Mechanics*, who were kind enough to supply us with the accompanying cut.



Right Way

Wrong Way

Most of the accidents caused from cranking an automobile engine are due to the crank suddenly flying backward before the hand can be removed and this usually results in a broken or strained arm or wrist, says *Automobile Dealer and Repairer*. These accidents can be avoided if the operator will take hold of the crank and place the thumb on the same side as the fingers. Never take hold of the crank as you would any other handle, with the thumb on the opposite side from the fingers.

ADVERTISEMENT IN A COLORADO NEWSPAPER

Mrs. ———, the eminent revivalist, will lecture in Durka Hall, Sunday afternoon next, on "From Hell to Heaven." The elevator will run from 2 to 4.—*Life*.

CIRCULARS AND ADVERTISING MATTER

Who Reads Them?

Well, for one answer, we do. Is it all good stuff? No, some is rotten, but a great deal of it is good and some worth its weight in gold—even more than that. We have never lost much time in reading any of the stuff received and we know we have made much money by giving good attention to all the circulars, devices, etc., received.

We are prompted to write the above by receiving a circular containing the following, which is good stuff to soak, to absorb.

One of the most successful men of America, when asked to what he attributed his success replied:

"I built my fortune on the dial of my watch, seconds became pennies, minutes became dimes, hours became dollars. I gave a money value to every tick, and took advantage of everything that economized time. I never procrastinate; I never wait for other people to get ahead of me. I keep my eyes and ears open for opportunities; I look well into whatever seems good to me; when my judgment approves I act promptly and with decision. I don't know that there is any particular rule or law of success, but I'm pretty sure that one of the foundation principles is, 'Don't lose Time'."

Time saving, which means the intelligent use of time, is undoubtedly one of the great factors of success in any walk of life; and that is why inventive genius is kept busy devising means to multiply the values of a day. Anything that enables a man to do more with less effort saves time and energy and permits him to undertake much that was impossible before. The steam engine, the telegraph, the telephone, the automobile, the electric motor, the typewriter, the perfected printing press, etc., etc., are time-savers that in fifty years have done more toward the development of civilization and the increase of the world's wealth than had been accomplished in a thousand years of effort before these economists of time were introduced. Whatever saves time increases convenience, and limits the waste of mental or physical energy, adds to the money-making power of the world and becomes a business necessity.

THINKING VS. DREAMING

By HERMAN PRICE

of the Dixon Philadelphia Branch

Sometime when you suddenly wake up and find yourself wasting a whole lot of time over an unimportant matter, experiencing difficulty in arriving at a conclusion, just open your eyes still wider, and ask yourself the question: Am I actually *thinking* about this subject, or am I simply *dreaming* about it?

Thinking involves concentration—the forcing of given facts into logical and sequential order, from which further facts are evolved, and ultimately the decision in the whole matter.

Dreaming involves an involuntary revolving in the mind of given facts until they finally lodge themselves in some position whereby a conclusion is reached—and it is very apt to be an unsafe conclusion.

If business men would do more real thinking and less dreaming, how much more work, and how much better work, they would be able to do.



Old-Timer Talks No. 4

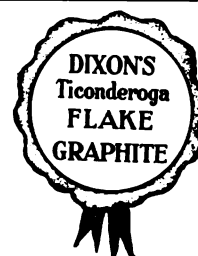
I remember a new engine we got once; the very first day she ran so hot she was laid up. Well, I had an idea I could run that engine and so I got the master mechanic to let me take her out.

Before starting, I carefully worked some of Dixon's Flake Graphite in on her pins and boxes. Then I took her out on the express and when I brought her back she was as cool as a cucumber. I ran her regular after that and was glad to get a new engine—she was certainly a dandy.

I tell you there's nothing like Dixon's Flake Graphite for new or old engines. But don't take my word for it, get a free sample and see for yourself.

Joseph Dixon Crucible Co.

Jersey City, N. J.



PERPETUAL INJUNCTION

Imitations of Dixon's Motor Graphite Lubricants Enjoined

In order to enable purchasers to obtain the genuine lubricants of the Joseph Dixon Crucible Company and to protect them against imposition, we have made it a practise to sell our lubricants in original packages, made distinctive in appearance by the red labels. We have recently been compelled to take action to prevent the sale of other graphite put up in packages bearing red labels. The imitative packages appeared on the market in Chicago, and we promptly instituted suit in the United States Circuit Court there. A preliminary injunction was asked for and granted by the Court. Thereafter a perpetual injunction was issued, of which the following is a copy.

Circuit Court of the United States,
Northern District of Illinois,
Eastern Division. } **SS.**

The United States of America,

TO EXCELSIOR SUPPLY COMPANY,
 and to your Counselors, Attorneys, Solicitors, Trustees, Agents,
 Clerks, Employes, Servants and Workmen, and to each and
 every of you, GREETING:

WHEREAS, It hath been represented to the Judges of our Circuit
 Court of the United States for the Eastern Division of the Northern
 District of Illinois in Chancery sitting, on the part of

JOSEPH DIXON CRUCIBLE COMPANY,

Complainant in its certain bill of complaint, exhibited in our
 said Circuit Court, on the Chancery side thereof, before the Judges
 of said Court, against you, the said

EXCELSIOR SUPPLY COMPANY,

to be relieved touching the matters complained of. In which
 said bill it is stated, among other things, that you are combining
 and confederating with others to injure the complainant touching
 the matters set forth in said bill, and that your actings and doings
 in the premises are contrary to equity and good conscience. And
 it being ordered that a Writ of PERPETUAL Injunction issue out
 of said Court, upon said bill, enjoining and restraining you, and
 each of you, as prayed for in said bill; AND AS ORDERED BY THE
 COURT, We, therefore, in consideration thereof, and of the par-
 ticular matters in said bill set forth, do strictly command you,
 the said

EXCELSIOR SUPPLY COMPANY,

your Counselors, Attorneys, Solicitors, Trustees, Agents, Clerks,
 Employes, Servants and Workmen, and each and every of you,
 that you

DO ABSOLUTELY DESIST AND REFRAIN FROM

making use in connection with the sale of graphite not by or
 for the complainant made of packages like those in the bill of
 complaint described as the packages by it, the defendant, used,
 and specimens of which are filed therewith and designated
 "Defendant's Package A," "Defendant's Package B" and
 "Defendant's Package C"; and otherwise in every way from
 making use in connection with the sale of graphite of any other
 package whatsoever which shall be so nearly like complain-
 ant's packages in the bill of complaint described and speci-
 mens of which are produced therewith and designated "Com-
 plainant's Package A," "Complainant's Package B" or "Com-

plainant's Package C" as to be calculated to mislead; and
 from making use of any label or labels resembling in appearance
 the label or labels of complainant in said bill of complainant
 referred to so closely as to be calculated to mislead in con-
 nection with the manufacture or sale of any graphite product
 not of complainant's production, or from making any mis-
 leading use of labels of red color; and from making use in con-
 nection with any graphite product not of complainant's pro-
 duction of the numbers "1676," "1677" and "1688," or any
 other numbers fraudulently simulating complainant's said
 numbers or trade-marks "676," "677" and "688"; and from
 doing any act or thing calculated to cause any graphite pro-
 duct not by or for complainant made to be mistaken for or
 accepted as the product of complainant,

until this Honorable Court, in Chancery sitting, shall make
 other order to the contrary. Hereof fail not, under the penalty
 of what the law directs.

To the Marshal of the Northern District of Illinois, to execute,
 and return in due form of law.

WITNESS, the HON. MELVILLE W. FULLER,
 Chief Justice of the United States of America,
 at Chicago, in said District, this THIRTIETH day
 of JULY in the year of our Lord one thousand
 nine hundred and NINE and of our Independence
 the one hundred and 34TH.

H. S. STODDARD, Clerk.

MARSHAL'S RETURN.

I have served this writ within my district in the following
 manner to wit: Upon the Excelsior Supply Company, by
 reading the same to and within the presence and hearing of
 C. C. Boynton, Manager of said Company, at the same time
 giving him a true copy thereof on the 30th day of July, 1909.
 I was unable to find the President, or other officers of the
 Company in my district.

LUMAN T. HOY,
 U. S. Marshal.

Fees:

L. Service \$2.00
 1 Mile .06

\$2.06

By THOMAS MIDDLETON, Deputy.

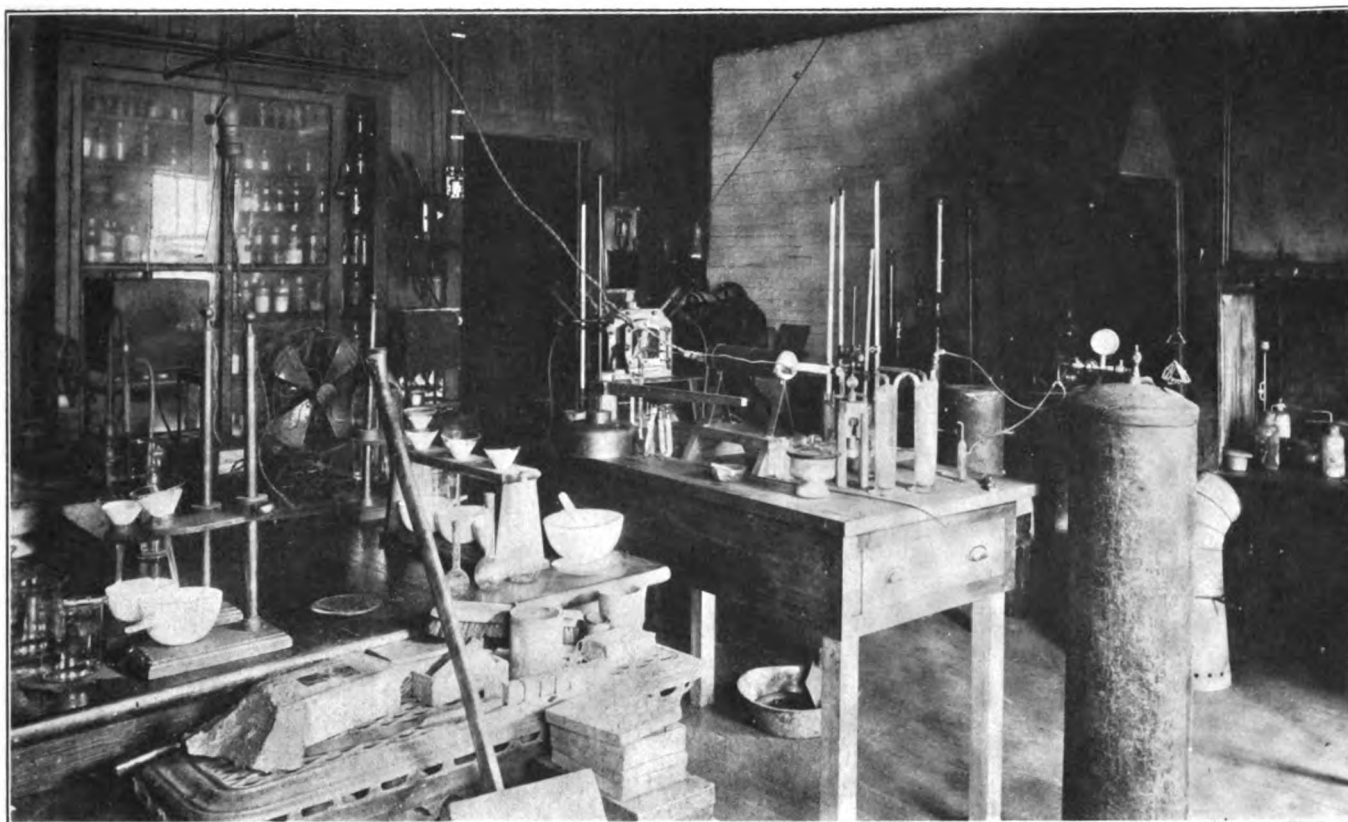
(Endorsed) Filed Aug. 2, 1909, H. S. STODDARD, Clerk.

NORTHERN DISTRICT OF ILLINOIS, }
 EASTERN DIVISION. } **SS.**

I, H. S. STODDARD, Clerk of the Circuit Court of the
 United States, for said Northern District of Illinois, do here-
 by certify the above and foregoing to be a true and complete
 copy of the CERTAIN INJUNCTION WRIT ISSUED ON THE THIRTIETH
 DAY OF JULY, RETURNED WITH THE MARSHAL'S RETURN THERE-
 ON ENDORSED AND FILED in said Court on the SECOND day of
 AUGUST A. D. 1909, in the cause wherein JOSEPH DIXON
 CRUCIBLE COMPANY is the COMPLAINANT, and EXCELSIOR
 SUPPLY COMPANY is the Defendant, as the same appears
 from the original THEREOF, now remaining in my custody
 and control.

In Testimony whereof, I have set my hand and affixed
 the seal of said Court at my office in Chicago, in said
 District, this SIXTH day of AUGUST, A. D. 1909.

H. S. STODDARD, Clerk.



DIXON'S CHEMICAL LABORATORY

The accompanying photograph shows a recently taken view of the Dixon laboratory. This company has the facilities and equipment for testing their raw materials and finished products. The advantages of this practise in keeping materials up to standard and maintaining uniformity are self-evident.

The laboratory is in charge of a head chemist of wide experience.

Those who are familiar with chemical equipment will be easily able to pick out several pieces of modern apparatus as well as the more usual, though necessary, paraphernalia.

THE LUBRICATION OF PLANER "V'S"

Probably there isn't a piece of machinery which gets a more varying amount of work than a planer. The exposed "v's" collect all the loose grit and pieces of steel which are floating around the shop and it is very hard to lubricate them properly with ordinary oil lubrication.

An unsolicited letter comes to us which emphasizes these remarks very strongly.

OTTAWA, ONT.

Messrs. Joseph Dixon Crucible Company,
Jersey City, N. J.

DEAR SIRs:—

I would like to know if you advocate the use of your graphite on planer "v's," etc., and if you have not, perhaps the following may be interesting to you. (It is to me).

I am running a 5"x4"x18" planer and the "v's" were badly scored shortly after the machine was set up, and as we have a great deal of "short-stroke" heavy work, they require almost constant attention.

We had a number of 108" dia., 40" face split pulleys weighing about four tons to plane, and as the planer would only take four feet under the cross-rail, we had to plane them under the tool box, one end at a setting, using an 8" stroke. As you are no doubt aware, these "stunts" are not unusual, and as planer people are sometimes "stingy" with their oil wells, the "v's" have to go thirsty the greater part of their length.

We procured a can of Dixon's Flake Graphite (and never asked the price), and I am sure it saved its cost (and we don't know yet what that was) in two days, as it was no small job to hoist that half pulley off the planer to "oil up," as we have no electric traveling cranes in our shop.

Yours very truly,

THE TAXICAB BILLS

The traveling man who comes to New York or Chicago or any other city where taxicabs are in vogue will save money by observing the printed tariff rules. The taxicab drivers are formulating tricks of the trade quite as ingenious as their predecessors, and the business man who is alive to them can profit thereby. For instance, the driver will relieve his customer of his bags with a cordiality and alertness that is as surprising as it is expensive—for the bags are deposited on top of the cab at a cost of twenty-five cents a bag. Pile all the luggage you can inside the cab and it rides free, but outside is a different matter.

Another trick that runs up the bill is to attach the registering device to the rear rather than to the front wheel of the taxicab. If the pavement is wet and, as usually happens, the rear wheels spin rapidly for a moment before getting their grip, the register runs up a mile or so before the machine is really under way—and the passenger pays accordingly.

—System.

USE AND MISUSE OF GRAPHITE

Graphite properly used is the engineer's friend, and there are numerous uses to which it can be put with very satisfactory results. It is good to mix with oil and use on the bolts and nuts of cylinder heads, steam-chest covers, pipe flanges, etc., because it makes the nuts work easy when one wishes to break a joint. If the nut and bolt of the rear handhole plate of a horizontal tubular boiler are well coated with graphite, and the bolt, nut and crab covered with a few handfuls of asbestos mortar, they will stand a fierce heat for months, and a wrench is all that will be needed to remove the plate.

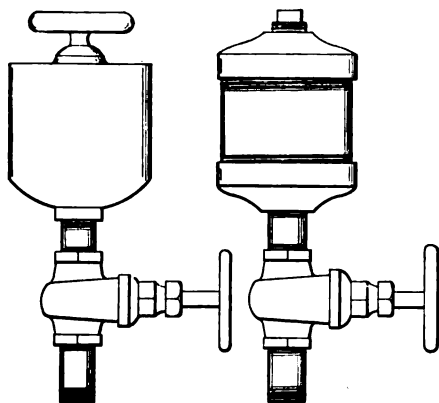


FIG. 1

FIG. 2

Never plaster graphite and oil all over a gasket and then cuss because the packing slides out of the joint when the bolts are set up. Graphite one side of the gasket only. Put the gasket on the plate and graphite the exposed side. The gasket will then come off with the plate and leave the other surface clean and smooth. For this purpose the graphite should be mixed to a thick paste with cylinder oil.

Rod and valve packing for steam should be given a liberal coat of graphite when putting in place. The packing commonly used in the water end of a pump is made of several layers of heavy cotton cloth cemented together with a rubber compound, and it is nothing uncommon for the rings of packing to stick together so firmly, especially in hot water, that the expanding device is unable to set them out as they wear. A little graphite between the rings will prevent their sticking and the packing will run much longer without attention.

As a lubricant for steam cylinders and internal-combustion engine cylinders, graphite is undoubtedly valuable, but the difficulties of feeding it discourage many from trying it. To get graphite into a cylinder all that is needed is a small cup with a straight, free outlet.

Fig. 1 shows how a cylinder oil cup may be made over to feed graphite. Use a gate valve or plug cock, and attach the cup to the steam chest, or as near to it as possible. Fig. 2 shows how a cup may be made of pipe fittings, and, if carefully made of brass, it does not look bad.

Having attached the cup, put in about a teaspoonful of oil and graphite, mixed to the consistency of paint, close the cup and open the valve wide. In my plant I have a 7½ x 6 inch duplex boiler-feed pump which has had no lubrication except graphite for the past three months, and I have never seen a smoother or quieter working pump, although it is taking the returns direct from a heating system. This pump has been

working constantly day and night and every day in the week on about three teaspoonfuls of graphite per twenty-four hours. In the three months we have used in the pump less than two pounds of graphite and hardly a gallon of cylinder oil. It was formerly nothing uncommon to feed a quart of cylinder oil to such a pump every twenty-four hours. This would be 7½ gallons per month, which at fifty cents per gallon, is \$3.75 per month, or \$11.25 for three months, a matter of \$10.35 saved on lubrication in that time. If this amount can be saved on one small pump, what about a plant where there are a number of pumps of various sizes? This same scheme can be used on engines also, although I should not advise discontinuing the cylinder oil altogether. Aside from economy, this should interest engineers who are using condensed exhaust for feeding boilers.

One reason why some make a failure of graphite as a lubricant is because they use too much, both in cylinders and elsewhere. During my early experience with it the outboard bearing on a 16½ x 48 inch Corliss engine heated up one day, and as oil failed to produce the desired result, I gave it a bountiful supply of dry flake graphite, and the heating rapidly decreased. I then flushed the bearing with oil and soon had it in normal condition.—H. L. STRONG, Portland, Me.

—*Power and The Engineer.*

THINGS TO FORGET

If you see a tall fellow ahead of a crowd,
A leader of men, marching fearless and proud,
And you know of a tale whose mere telling aloud
Would cause his proud head to in anguish be bowed,
It's a pretty good plan to forget it.

If you know of a skeleton hidden away
In a closet, and guarded, and kept from the day
In the dark; and whose showing, whose sudden display
Would cause grief and sorrow and life-long dismay,
It's a pretty good plan to forget it.

If you know of a thing that will darken the joy
Of a man or a woman, a girl or a boy,
That will wipe out a smile, or the least way annoy
A fellow, or cause any gladness to cloy,
It's a pretty good plan to forget it.

—ANON.

HUMOR AND TRUTH

What a dull, uninteresting—yes, burdensome—life this would be without a little humor occasionally, and yet, when you think of it, how much truth there is back of all humor that is really *humorous*.

For example, Shakespeare, in Henry IV, presents to us the well known, lazy, shiftless, immoral, but good-natured character, Falstaff; and the key to this man's whole make-up is given us in the following amusing utterance made by him at a time when he was objecting to active military service.

"I were better to be eaten to death with rust than to be scoured to death with perpetual motion."

In these words we find the very essence of the spirit that means failure, whether in business or in any other vocation in life.—WITH THANKS TO DIXON PHILADELPHIA BRANCH.



Mr. C. E. Herrick, superintendent of the Dixon cedar mills in Florida, has returned after a trip north. We had no idea that he passed through strenuous days here but the following is from his home paper, *The Crystal River News*.

Mr. C. E. Herrick has returned from a three weeks trip "down East." He says there are no mosquitoes there, and the weather is fairly pleasant, permitting him to sleep comfortably under one blanket there, while he requires two here. He thinks people in New York are too busy after the dollar to enjoy life or love his neighbor. He was kept busy side-stepping vehicles, and came near losing his life. He avoided being run over by a taxicab by jumping in front of an unseen street car, which slowed up in time to save him as he made another jump only to find himself run down by a car, which was also stopped just as it butted against him. Now he can jog along with old "Rex" from the cedar mill to his residence. He has only to look out for Capt. Lind on his new motorcycle.

GRAPHITE IN BOILERS

Mr. Frank Wulffen says in March, 1909, issue of *Power and The Engineer*:

One of the jobs I had in my earlier experiences was that of boiler washer in a plant containing six 250 horsepower water-tube boilers. These boilers were washed out every six weeks. When I closed up a clean boiler, I put two pounds of flake graphite in each drum.

When a boiler was opened up after this treatment, and the turbine cleaner run through the tubes, the scale came off very readily. By examining the side of scale which was next the tube, graphite could be seen clinging to it. The same condition was found existing in the drums.

Since I received my license and had charge of boilers, I have used this same idea and find it works fine, especially in return-tubular boilers, where the tubes are harder to clean.

QUESTION OF H. B.

I saw in the February *Review* that graphite was the best boiler paint. Would like to know how to mix graphite; with what, and what consistency it must be when applied to boiler; or can I use it like ordinary powdered stove blacking?

A.—Use about nine parts paint and one part graphite. If it gets too thick you can thin it with Japan.

—*Thresherman's Review*.



WHEN THE CRANK PIN GETS CRANKY

¶That's the time something has to be done, and quickly. And that's the time Dixon's Flake Graphite shows up strong.

¶It cools down the hot pin promptly and surely.

¶If the heating up has been due to wear, or if the surfaces have been roughed, Dixon's Flake Graphite will smooth out the irregularities and practically resurface the parts to fit.

¶This action of Dixon's Flake Graphite proves its exceptional lubricating powers.

¶It demonstrates how friction is reduced even under normal conditions of service when Dixon's Flake Graphite is applied regularly.

¶And the important fact is that Dixon's Flake Graphite is the only lubricant that can render such a lubricating service.

**JOSEPH DIXON
CRUCIBLE COMPANY,
JERSEY CITY, N. J.**

STEEL CAR PAINTING

The painting of steel cars is vital, for it is obvious that the car would rapidly deteriorate unless protected in some way. It should be equally obvious, however, that the paint only offers protection to the car in proportion to its own efficiency and durability. In other words, good protection cannot be offered by a poor or even an indifferent paint.

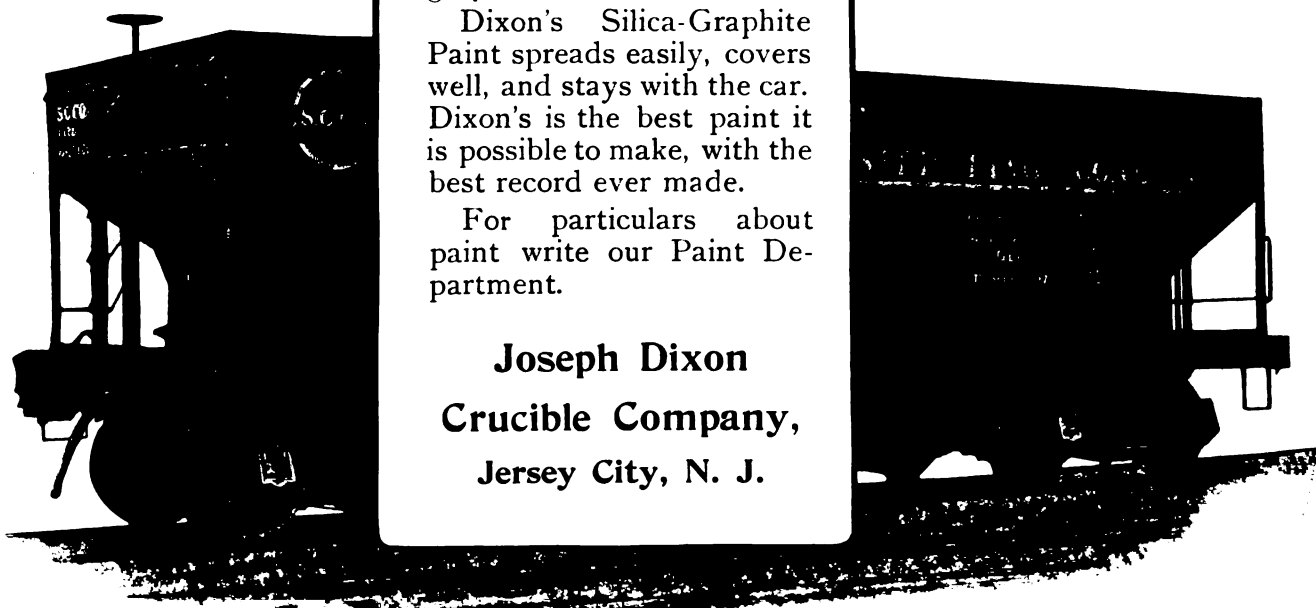
DIXON'S SILICA-GRAPHITE PAINT

has the right qualifications. It possesses that essential quality of elasticity, thus perfectly meeting the recommendation of the Master Car and Locomotive Painter's Association. The reason for this elasticity lies in the inert pigments, silica and graphite.

Dixon's Silica-Graphite Paint spreads easily, covers well, and stays with the car. Dixon's is the best paint it is possible to make, with the best record ever made.

For particulars about paint write our Paint Department.

Joseph Dixon
Crucible Company,
Jersey City, N. J.



GRAPHITE

VOL. XI.

OCTOBER, 1909.

No. 10.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

COPYRIGHT, 1909, BY JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

HOLDING BACK ON ORDERS

We have heard within the past few days complaints from manufacturers that dealers are holding up their orders until the last moment, and then expecting them to be filled without delay. This is a state of affairs which is very likely to develop at a time like the present, when the country's business is reviving with exceptional rapidity after a period of more or less continuous dullness, and yet it is one to prevent which immediate and vigorous steps should be taken, for if it is allowed to assume too exaggerated a form, it may cause serious congestion, which, in turn, will delay the return to better than normal conditions of prosperity, now imminent.

It is a mistaken idea for dealers to suppose that manufacturers in general are carrying a heavy stock of goods. The reverse is true. Orders have been frequent and large for sometime past, and leading makers of staple and special lines are behind with their deliveries, some as long as from four to six weeks. Retailers are naturally somewhat cautious in their buying as a result of the experiences of the past two years, but they cannot afford to allow this caution to blind them to the fact that the next year is to be one of exceptional activity in every branch of trade, and it is only by preparing for its demands early that they can be met with any degree of satisfaction to all who are concerned. The manufacturers are doing their utmost to meet the demands which are being made upon them, but they need the co-operation of the dealers, which the latter can best give by sending in their orders without delay, and allowing the manufacturers a reasonable time in which to fill them.

Just one thought in conclusion. It is with the greatest satisfaction that we give this warning, indicating, as the necessity for making it does indicate, that the order of the day is to prepare for prosperity by being liberal and prompt with orders instead of to be careful and conservative in forecasting the volume of business to be done during the months to come.

—Geyer's Stationer.

"I REJOICE that the difficulty lay in the table of contents rather than in the appendix."—*Everybody's*.

WHAT FLORIDA THINKS OF NEW YORK

After all, our far off friends in the country do not seem to envy the New Yorkers as much as they are supposed to. Mr. Herrick, our superintendent of the cedar mill at Crystal River, Florida, visited New York City during July. He complained a great deal of the cold, had to do a vast amount of jumping to keep out of the way of things in general, had several adventures, and was "mighty glad" to get back to Florida. Now we hear of a friend of his who was in New York at the same time. He says he walked up one street and down another looking for Mr. Herrick, but did not find him. He asked several people if they had seen Mr. Herrick, but they didn't even know him. As to life in New York, it was altogether too fast. There were cars under the street, cars on the street, and cars over the street, and cars even under the rivers, and the pace made him dizzy. People did not call him "rube," didn't even notice him. He had to pay as much for a single room one day as he does for his two-story house and three broad acres of land a whole week in Crystal River. He didn't even have the satisfaction of rubbing soap on his hands—"you just pour it on or tip over a contraption, and the soap squirts on." As to what the nights in New York were, the less said about that the better; it was back to Florida for him.

DIXON'S INDELIBLE PENCILS

They Win Over the Foreign Make

The following letter comes to us from the secretary of one of the very largest shipping and commission merchants, export and import, in New York City. As we have not as yet asked permission to publish the firm name of these merchants, and as we hesitate to do it without permission, we will simply say that the matter commenced sometime ago when the Dixon Company was called on the telephone and asked if it made a first-class indelible pencil, as they were having some trouble with their indelible pencils, although they had attempted to secure the very best in the market.

The letter which we quote now tells the result.

NEW YORK, July 15th, 1909.

*The Joseph Dixon Crucible Company,
Jersey City, N. J.*

GENTLEMEN:—

Referring to telephone conversation of sometime ago between your Mr. Long and the writer, we beg to say that until that time we exclusively used indelible pencils of a foreign make. We have thoroughly tested yours with the result that we find them the most satisfactory we have ever had, and have permanently adopted them for use in all departments.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

OFFICERS:

President—GEORGE T. SMITH
Vice Pres. and Counsel—WILLIAM H. CORBIN
Treasurer—GEORGE E. LONG
Secretary—HARRY DAILEY

DIRECTORS:

GEORGE T. SMITH	WILLIAM H. CORBIN
GEORGE E. LONG	EDWARD L. YOUNG
WILLIAM MURRAY	HARRY DAILEY
WILLIAM G. BUMSTED	

SALESROOMS AND OFFICES:

NEW YORK SALESROOM, 68 Reade Street.
PHILADELPHIA SALESROOM, 1020 Arch Street.
SAN FRANCISCO SALESROOM, 145 Second Street.
CHICAGO OFFICE, 1324 Monadnock Block.
BOSTON OFFICE, 636 John Hancock Building.
PITTSBURG OFFICE, Wabash Terminal Building.
ST. LOUIS OFFICE, 602 Victoria Building.
WASHINGTON, D. C., OFFICE, 814 14th Street, N. W.
BALTIMORE OFFICE, 1005 Union Trust Building.
BUFFALO OFFICE, 72 Erie County Savings Bank Building.

A DIXON CRUCIBLE HANGER

The Joseph Dixon Crucible Company has gotten out a handsomely illustrated crucible hanger.

The center piece is a realistic foundry scene. Brawny, bare-armed men are seen in the red glow of the moulding room, pouring the molten metal from a Dixon Crucible into a mold.

The illustration is made from a photograph, and the picture is true to life in every particular.

At the top of the hanger is an illustration in black and white of the Dixon plant at Jersey City. The Dixon factories and office cover nearly eighty city lots.

The other illustrations on the hanger show only the Dixon's products that are made especially for foundry and metallurgical purposes, and consist of crucibles, stirrers, boxes and covers used in burning electric light filaments and for case hardening purposes, muffles and phosphorizers, brazing crucibles, dipping cups, skimmers, etc.

In the way of printing, there are on the hanger some valuable rules for the care and use of crucibles.

Probably the following letter, which we received from a well known steel foundry company, will show better than anything that we can say what users of crucibles think of the hanger:

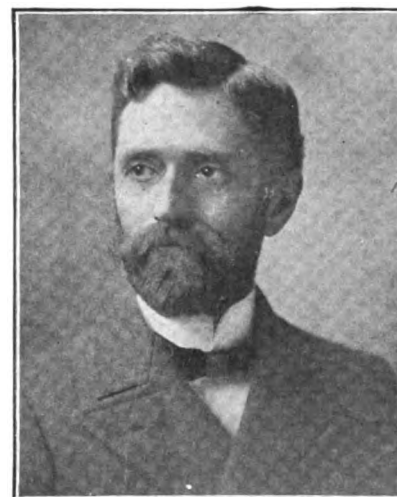
"The hanger or panel which we received from you was hung in our foundry as you suggested, and the avidity with which the same was inspected and read, also the comments which followed, bear testimony to the fact that it had at least interested our men."

"The hints contained on the panel brought to the attention of the men in this way, we believe carries much more weight than a great deal of our cautioning might do."

We shall be very glad to send one of the above hangers to anyone interested.

DIXON IN BUFFALO

Our friends in western and northern New York and Canada will be glad to learn that we have established a permanent office in the city of Buffalo, the local address is 72 Erie County Savings Bank Building. The establishment of this office is made necessary by the rapidly growing Dixon business in section named.



The Buffalo office will be in charge of Mr. John A. Condit, who has been with the Dixon Company since 1896. Mr. Condit is thoroughly familiar with this territory and well known to our customers.

THE HARTFORD LUMBER COMPANY,
Office and Yard

No. 17 Albany Avenue, HARTFORD, CONN.

June 29th, 1909.

Joseph Dixon Crucible Company,
Jersey City, N. J.

GENTLEMEN:—

Will you kindly send us at the very earliest possible moment one keg axle grease No. 625, the same as you shipped to us August 24th, 1907. We have found this grease the best we have ever used and would appreciate a quick shipment.

Yours very truly,

THE HARTFORD LUMBER CO.
Per Wm. J. Riley.

PREVENTING CORROSION OF STEAM MACHINERY

By W. H. WAKEMAN

Chapter XVII

Fig. 57 illustrates an upright water tube boiler in which some of the tubes stand at an angle, while others are vertical. Each set of tubes has its separate mud drum at the bottom and steam drum at the top. The feed water enters at the rear, in the coolest part, and passing from one section to another is finally evaporated and sent out of the central steam drum, one head of which is shown with a manhole in it.

The hot gases rise from the grate, and meeting the inclined tubes pass out through narrow spaces between them, according to general practise, except that there are no baffle plates, therefore the whole space is available for this purpose, but each separate space is very narrow, hence the current of the gases is broken up and heat passes very rapidly to the water.

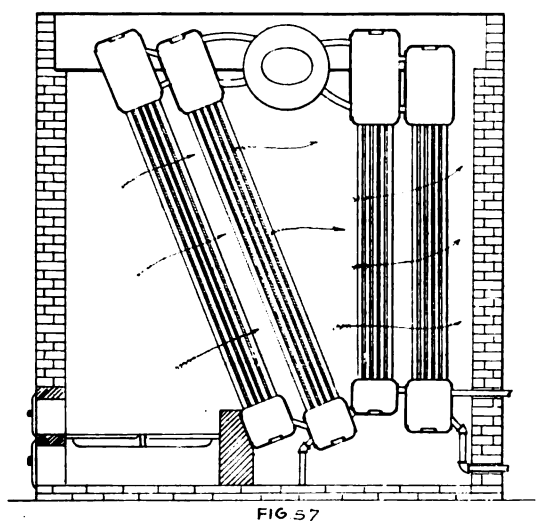


FIG 57

It seems to be a popular idea among a certain class of engineers to try and see how hard they can force the boilers in their plants, although the object of such action is not always plain. For illustration of this point, in a certain plant a boiler shown in Fig. 57 was rated at 375 horsepower, but when put into service the load was increased until it developed more than 700 horsepower. As a general rule, to which the exceptions are few and far between, boiler makers rate their product as high as they ought to be developed, and when this high rating is nearly doubled it shows that not only has conservatism been repudiated, but good engineering practise no longer dominates the operation of that plant. Such action not only wastes coal but soon ruins the best boiler settings, and if the boiler itself does not show bad effects it is because they are concealed from convenient inspection, and will appear later on.

When a boiler consists of straight tubes expanded into two shells or drums, and pressure is put upon them that is sufficient to bulge one or both of the heads, the effect on the tubes becomes interesting. The outer rows remain in tension, hence keep in place, but those forming the center are put under compression, consequently they buckle, and if the process is continued they will bend enough to come out between those composing the outer rows or circle, as the case may be, present-

ing a very suggestive state of affairs, for it shows that when a head into which tubes are expanded as shown, bulges even to a small extent, the whole strain caused by holding the two drums together must be borne by a part of the tubes, hence they may pull out of the heads and cause a failure that will take lives and destroy property.

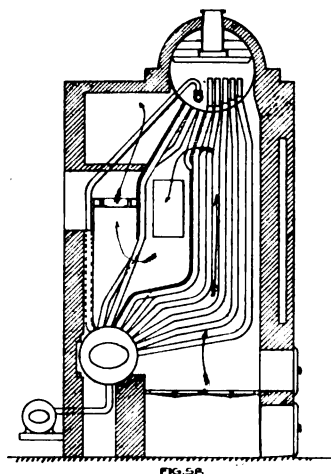


FIG 58

Fig. 58 shows another boiler consisting of two drums connected by tubes, but they are not straight, hence are free to expand independently or together according to conditions, without straining any of the parts. Baffle plates cause the products of combustion to travel as indicated by the arrows, thus imparting their heat to the water before they go to the chimney. The large distributing drum rests partly on the bridge-wall, but the mud drum is outside of the setting where heat cannot reach it.

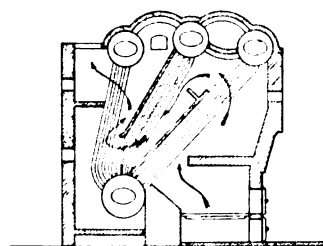


FIG 59

Fig. 59 is a water tube boiler consisting of three steam drums and one water drum, connected by tubes that are nearly straight but are curved enough to allow expansion and contraction to take place under ordinary working conditions, without rendering the boiler unsafe. Combustion takes place in a brick furnace, therefore the highly heated sides and top of it combine to burn the gases that would otherwise make large volumes of smoke.

An important point to be taken into consideration in connection with these boilers, is the facilities presented for keeping them free from soot and ashes, because a thin coating of soot, even when spread over a thin plate, will cause the loss of much more heat than a thick shell, provided the latter is kept clean. It is not practical to clean a water tube boiler with a scraper or other mechanical device, but means should always be provided for applying a steam jet where it is needed most, as it works quickly and requires but little time, therefore it may be applied every day, doing good work accordingly. Engineers complain about lack of facilities for doing this work,

and it certainly is a great mistake for the boiler maker to omit such an important feature, and it is not good business policy for the steam user to allow such a state of affairs to continue. It is bad for the former because it makes his boiler appear to be wasteful of fuel after it has been in service for a short time, and it is a costly luxury for the latter as he has to pay the bills for fuel.

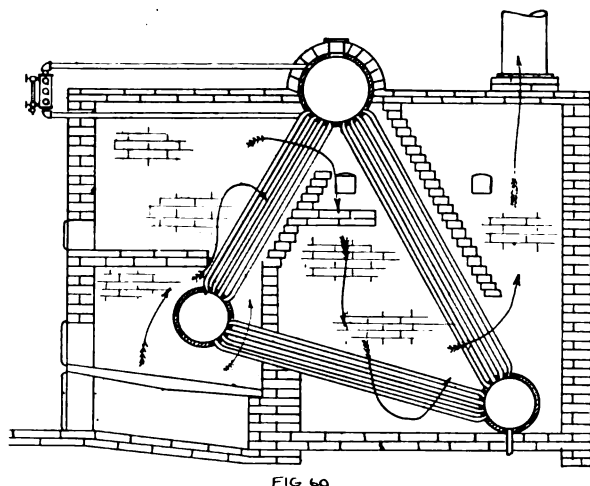


Fig. 60 shows a combination boiler, as some of the tubes are vertical while others are horizontal. All tubes are arranged to enter the steam and mud drums radially, which not only gives them a better hold at the expanded joint, but at the same time it gives some of them a chance to spring enough to compensate for uneven expansion and contraction. A peculiar feature of this boiler is that one of the drums is located directly in the furnace, where it is exposed to the direct action of the flames and hot gases. This causes the rapid formation of steam in this drum, and as this steam mixed with hot water rises rapidly through the upright tubes, water comes from the mud drum to take its place, and thus a rapid circulation is maintained as long as the fire is continued.

The upper drum of this boiler, and some of those shown in previous chapters, are covered by brick arches to keep heat where it will do the most good. When springing these arches over the parts mentioned, masons almost always drop mortar on the boiler. This does no special harm as long as it dries and remains in that condition, but if moisture collects here, as it is liable to when the boiler is laid off for a few weeks more or less, the iron may be damaged by it. To prevent this action, paint the drum or shell with Dixon's Special Graphite No. 635 oiled. The object in taking this particular brand is to secure the graphite with the minimum amount of other material. This brand is ground in just enough sperm oil to hold it in paint form, consequently it ought to be well brushed out in order to avoid wasting stock. Of course it must be applied and given reasonable time to dry before the mason work is completed.

(To be Continued.)

AN OLD lady from the country boarded an electric car for the first time, and, after several blocks' ride, she motioned to the conductor and said:

"At which end shall I get off?"

"Either, Madam, they both stop," was the reply.

—*Orpheum Joke Book.*



Old-Timer Talks No. 5

How long does it take the oil to get to the steam chest when you start out? Sounds like a conundrum, doesn't it—well, it is to more or less extent. Some say it only takes two or three minutes, others say it takes nearer fifteen.

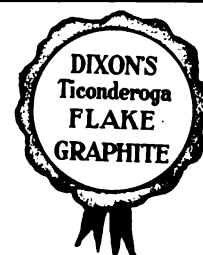
There is one thing certain, it does take some time, and in the meantime your cylinders are running without lubrication.

I never had any trouble this way 'cause I always used Dixon's Flake Graphite on my engine. This kept the cylinders and pistons polished and enough graphite stayed on the friction surfaces to prevent excessive wear, strain, and friction when I started up.

It's about time for you to get that free sample, if you haven't sent for it already.

Joseph Dixon Crucible Co.

Jersey City, N. J.





H. A. VAN DERSLICE

Mr. H. A. Van Derslice is the latest addition to the Dixon staff, being engaged August 1st, 1909.

Mr. Van Derslice is in the prime of life and has back of him a successful business career. We believe that his connection with the Dixon Company will be for a long term of years, and that he will be successful in holding the friendship of the trade and in promoting the success of the Dixon Company. For the present Mr. Van Derslice will be attached to the St. Louis Branch as manager.

As we have in so many cases before in GRAPHITE, we now reproduce the picture of Mr. Van Derslice, together with a delineation from photograph by J. A. Fowler, practical phrenologist of Fowler and Wells, New York.

CONSTITUTION

We have before us the photograph of a gentleman who is well built, one whose family tree had roots that went well down into the earth. He is no sapling, nor is he like the spruce or fir trees in Maine that bend with the wind, but is substantially put together. The elements of firmness, reliability, integrity, energy and executiveness are indelibly stamped upon the features of his face, the breadth of his forehead, the height and width of his head, and the length from his chin to the crown of his head.

He is well proportioned physically and mentally speaking, and his mental vigor is kept up by the strength of his bodily powers. His evolution from childhood has been slow but complete, and there is every evidence of reliability, earnestness, zeal, and executive ability to not only master details, but to superintend and organize work.

The fullness of his forehead gives him his intuitive ability to place men right in public positions; also analytical ability to select material that is valuable, and detect any flaws in it, while his perceptive faculties gather information that is accurate and useful in the broadest sense of the term. He should be where he can command the respect of others in a judicial, financial, and comprehensive direction.

TALENTS

His talents lie in his judgment concerning men; in his in-

genuity and skill in bringing out new ideas; in adapting himself to people of all classes; and in his humane way of looking at things.

VOCATION

He ought to be engaged where he can have charge of men, oversee work, and develop plans for future business. He is adapted to special responsibilities in a business, and therefore could take the lead and work out ideas in a remarkably short space of time.

PHYSIOGNOMY

His eyes are large and luminous, which shows that they take into account everything on a broad and comprehensive scale.

His nose is of the Grecian type, which shows taste, but toward the end it takes on the form of the cogitative type which is adapted to the consideration of many schemes and plans of work.

His long upper lip shows concentration and steadiness of purpose. He will carry out what he begins to do.

The lower lip indicates sociability and friendship.

The chin shows that he can take command and shoulder responsibilities in a positive, conscientious way.

While the length and breadth of the ear are indicative of longevity, good heart power, excellent digestion when he gives himself time to assimilate his food, and general healthiness of organization and freedom from disease.

The height of his head shows that he is a man of principle, of generous impulses, strong opinions, of enterprising ideas and inspirational thoughts. He is therefore able to meet the world as he finds it, and make the best of it. He is not always complaining that things ought to be thus and so, but he turns the handle which sets the machinery in motion that makes things turn his way.

He should be an influential business man, an excellent financier, a good president of a bank or trust company, a utility man on a broad scale, and a general organizer of business methods.

There will be no drones in the hive where he works, for all will have to produce something and make good their opportunities.

THE PERFECT MAN

There is a man who never drinks,
Nor smokes, nor chews, nor swears;
Who never gambles, never flirts
And shuns all sinful snares—

He's paralyzed!

There is a man who never does
A thing that is not right;
His wife can tell just where he is
At morning, noon and night—

He's dead!

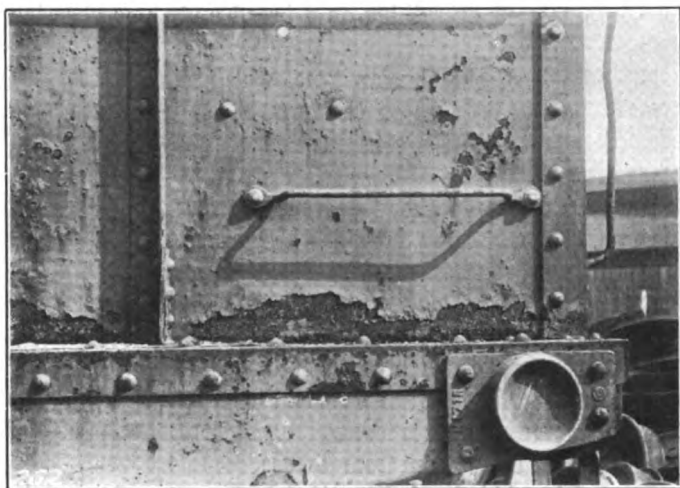
PAT was brought before the magistrate charged with assault and battery. His honor called his case and inquired of Pat whether he was guilty or not guilty.

"Shure, yure honor," the wily offender replied, "Oi wouldn't loik to state tell O've heard th' ividence."

—*Orpheum Joke Book.*

THE DURABILITY OF SILICA-GRAPHITE PAINT

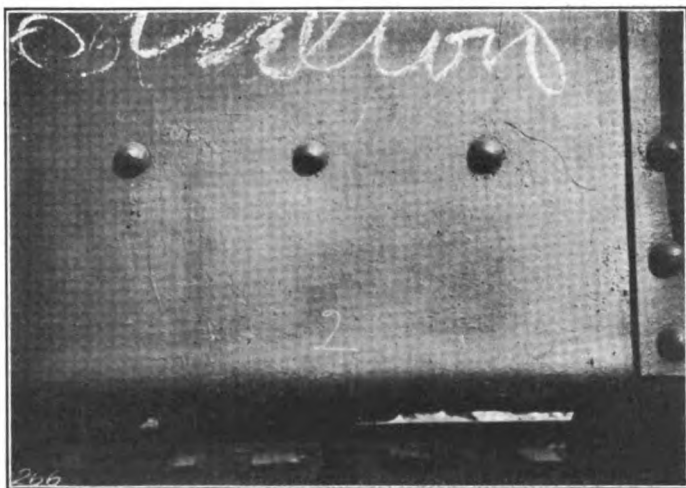
It is well known that almost any mixture of oil and powdered solids can be used as paint and that it will present a fairly attractive surface when fresh. But the condition of that surface after it has been exposed for a time to the weather will depend entirely upon the composition of the oil and the pigments. If the latter are such that they will form chemical compounds with the other substances with which they are apt to come into contact, the life of the paint will be short, or if the vehicle does not possess firmly adhesive properties or dries



Surface of Car Painted with Common Paint

into a hard scale instead of a soft and elastic film, then cracking through the skin, the paint on a metal surface is doomed, for rust will immediately set in and it is merely a matter of a short time before things will look badly.

In the accompanying illustrations the surfaces of two cars are shown that are of the same type and were in service for the same length of time on the same road, carrying the same class of lading. The time elapsed since the last painting was eighteen months in each case, and both are fair average examples of the cars which they represent. One was painted



Surface of Car Painted with Dixon's Silica-Graphite Paint

with a cheap common red paint that had scaled off in large patches over the whole of the surface of the sides and ends, with the resultant appearance that is shown in the photograph.

Rust had made heavy inroads on the plates and the whole was in a condition of rapid deterioration.

The other photograph illustrates the appearance of the surface of a car that had been painted with the silica-graphite paint made by the Joseph Dixon Crucible Company. It will be seen to be smooth and continuous throughout its whole extent, with no trace of rust or deterioration. A piece of the skin flaked off with a knife was soft, flexible and closely adherent to the steel, showing that there was still much of life left in it and that it would probably be many months before the car would need repainting. As a comparison of methods of painting it is of interest and importance.

—*Railway World.*

NOT A HUNDRED YEARS AGO

"What Fools We Mortals Be"

In 1825, Samuel Leggett lived in No. 7 Cherry Street and was made fun of by his neighbors because he advocated gas for illumination and made his house the initial point for its introduction in the city. The town soon ceased laughing.

When De Witt Clinton began talking about the Erie Canal it was at once named "Clinton's big ditch," and his friends told him that he was crazy to expect to ever carry through such an undertaking. With indifference to the criticisms he continued to work for his "big ditch," and the happiest day of his life was October 26, 1826, when the waters of Lake Erie were admitted to the canal which is today a monument to his indefatigable energy.

In the year that the great canal was completed, Samuel B. F. Morse came to New York City and soon afterward he suggested the electric magnetic telegraph. No man was ever more laughed at. It was even suggested that Congress appropriate money for building an experimental line to the moon. He patiently bore the ridicule, and in 1835, in this city, he completed his first model, and now the signals which he arranged are flashed across the ocean without the aid of a wire.

About this time John Stephenson was a coach builder in Broadway and conceived the idea of a street car to run on rails. He was told that the idea was ridiculous, that there was no call for it, and that it would not pay. He went ahead with his ideas, and on November 26, 1832, completed and exhibited the first street car.

When, in 1839, John Jacob Astor began his great New York real estate investments he was ridiculed for putting money in land that was only piles of rocks, but he kept right on with his investments.

Robert Bonner was laughed at in 1846 when he began negotiating for the purchase of a paper to make it a great story publication. But he went ahead and established the *Ledger* and did make it the greatest story paper in the world, starting a new school of literature out of which the myriads of magazines of today have come.

About ten years after the completion of Morse's telegraph model, another New York man was laughed at because he proposed to lay an electric telegraph cable across the Atlantic. For twelve years Cyrus W. Field worked at it, and on August 16, 1858, the first electric message crossed the ocean.

DIXON'S graphite publications sent free upon request.

PRACTICAL EXPERIENCES WITH LUBRICATING GRAPHITE

There have been some interesting discussions in the various trade papers regarding graphite for lubrication, about which we will have more to say later. The following two items appeared in the August 17, 1909, issue of *Power and the Engineer*.

GRAPHITE FOR LUBRICATION

Personally I favor the graphite in flake form, as it appears to me to "fill in" better than the powdered. I also believe that the flakes take a better hold on the bearing surfaces than the powder, which appears to squeeze out. Again, I imagine that the powdered graphite could hold more grit without a person discovering it in time than the flake could.

One plant which came under my notice, where flake graphite is used, consists of a 13 x 23 flat-valve steam engine, several hydraulic elevators, four steam pumps and a lot of different machinery and shafting. In this plant only one barrel of cylinder oil is used every fifteen months and one barrel of engine oil every twelve months, with about fifteen pounds of flake graphite every year. Such a thing as a hot bearing is not known, and I believe few plants of the same size, where oil alone is used, can show such a small oil bill, or have as little trouble with the bearings. A wrinkle used in the same plant is to use the powdered form. Mixed with common black japan as a boiler-front paint, it gives it a far longer life.

Toronto, Can.

JAMES E. NOBLE.

I prefer the flake graphite in place of the finely ground, for the reason that the flake graphite is harder to adulterate than the fine. I have no doubt that the fine graphite would be equally good if it could be got pure and kept clean. I have never had any success with fine graphite, as it seems to contain too much foreign matter.

One should use judgment in using any kind of graphite. For instance, if one uses too much, and perhaps with a poor grade of oil, hard lumps form that will cut ordinary soft shafting.

The best thing for a bearing that is inclined to run hot, is to use first a mixture of white lead and water, say one pound of lead to six quarts of water. This will wash out the bearing and at the same time lubricate it if used in sufficient quantity, and until the liquid comes out nice and white. One will notice that when this is first applied it comes out in a very dark color, due to the iron cuttings and dirt. Then after it comes clear, mix about two tablespoonfuls of flake graphite with about a pint of medium-weight oil for a day or so, and watch the bearing closely. After this, if possible, lubricate the bearing with some kind of suitable grease. It is sometimes advisable to mix a little graphite with the grease.

Homestead, Ore.

G. A. NESTLER.

CRIMINALS AT LARGE

Gibbs (visiting): "What sort of neighbors have you here?"

Dibbs: "A bad lot. There's a blacksmith who's engaged in forging, a carpenter who's done some counter-fitting, and a couple of fellows next door who sell brass and steel for a living."—*Boston Transcript*.

Getting Big Game

This is the season when the sportsman hears "the call of the wild." But the true sportsman also has a pride in his arms, and so takes good care of them. That's where

Dixon's Graphitoleo

comes in. This is a preparation of pure vaseline and Dixon's Flake Graphite, that is used to advantage on loading and ejecting mechanisms and inside and outside of barrels. It keeps your arms in prime condition, ready for instant use.

Dixon's Graphitoleo comes in convenient eight ounce collapsible tubes, making it handy to carry and apply—get a tube before you start on your hunting trip.

Joseph Dixon Crucible Co.
Jersey City, N. J.



PENCILS AND BRAINS

By R. M. BARSTOW

"What are you selling, Murphy?"

"Pencils," sez Murphy.

"You're a strapping big man, Murphy, and you must have a fine appetite," sez I.

"What then?" sez Murphy.

"Blind men on the corners sell pencils," sez I.

"They sell sympathy, not pencils," sez Murphy.

"And you *sell* pencils," sez I.

"And *brains*," sez Murphy.

He handed me a pencil, a yellow pencil; it was six sided. It was printed on four of the sides like this:

P. J. MURPHY	KEEP THE PENCIL
PENCILS and BRAINS	TALK WITH ME

I put it in my pocket.

"What then?" sez I.

"That's what they all do," sez Murphy.

"I'll expound to you the way to mix brains and pencils. Or anything else. What's a pencil? Nothing if you have it—the divvil if you haven't. You always save them; they come in handy. What's a calling-card? Nothing to anybody and yet you daren't be without one. They line the waste baskets; they never are remembered.

"Suppose I go into a man's office. The clerk on the outside asks for my card; I give him a pencil. He reads it. Then I give him another. 'The second one's for you,' I say. He takes the other into the boss with a grin on his face; the boss grins and says, 'Send him in.' Then I sell 'em to him for his boys. Brains and pencils."

"How did you think of it?" sez I.

"Ever hear of Maupassant? French writer. Marvelous short stories. Worked seven years before he sold anything. He discovered the theory. No matter how common anything is, that thing has a novel or new application if you look for it. He applied it to stories. Commonest subjects you ever saw. One was called 'A Piece of String'—it ended in suicide.

"So then, I applied it to business. Pencils with your calling card on them, \$36 a thousand. The pencil gets attention and after you are gone it keeps your name before the man."

"Costs too much," sez I.

"Doesn't cost as much as not getting an audience."

"How would it work in my business?" sez I.

"What do you sell?" sez Murphy.

"Coffins," sez I.

"It wouldn't," sez Murphy.

"For why not?" (hurt like).

"You can't interest the person that's going to use it."

"Oh," sez I.

"Have a pencil?" sez Murphy.

"Have a coffin?" sez I.—*Inland Stationer.*

THE irony of fate is shown in the case of Belden Woodring, thirty-nine years old, who had spent at least half of his years as a steeplejack and ironworker, having been employed on the Singer Building, the Metropolitan tower, and other skyscrapers, died yesterday morning in Mount Sinai Hospital from the effects of a fall last Monday from a chair two feet high.

PRESSMEN'S PENCILS

In printing books and publications, not newspapers, there are different stages in the process which require different pencils; if the different pencils are not easily procured by the pressman, he usually attempts to make one pencil suffice for all stages of the process, inasmuch as it is all that he has or because he does not know where to procure others which would suit his requirements. Possibly, he may not know what particular pencil to ask for.

The suggestion of a "set of pressmen's pencils" made us by a practical printer is as follows:

First, a Dixon's American Graphite "M=No. 3" or any Dixon's No. 3 pencils.

Second, Dixon's Sketching Crayon No. 341.

Third, Dixon's Blue Pencil No. 350.

Fourth, Dixon's Lumber Pencil No. 365 or Dixon's Pencil No. 475.

Dixon's No. 365 Pencil is especially recommended for rough "overlay" work, and the results are just what is wanted, when large pages are to be marked out, either for what is called the first "overlay" or for an "underlay" to be placed under the plates from which is transmitted the impression.

In newspaper work, where the newspapers are printed on "flat bed presses," when make-ready is required, Dixon's No. 365 is one of the best.

In book work, after the first "overlay" has partially leveled up the impression, then the pressman must get down to finer details, and as a rule for ordinary marking out, Dixon's Sketching Crayons No. 341 is recommended.

When it comes to finer marking out, where illustrations are involved, then a harder and finer pencil like Dixon's "M=No. 3" is required.

When the pressman desires to have an extra "patch" pasted on, he marks it out on the face with a Dixon Blue Pencil No. 350, and this marking is understood by the initiated.

As it is estimated that there are from 50,000 to 60,000 pressmen in the United States, it may be that the above information will reach some of them who are not already familiar with the Dixon pencils, and the proper ones to use in their work.

DRY AND SQUEAKY SPRINGS ON AUTOMOBILES AND HOW TO CURE THEM

Dry springs are responsible for squeaky sounds, which are not only disagreeable, but make the car sound old and ride hard. It is because the individual leaves become in time rusted and do not slide freely over each other.

This condition may be easily remedied by jacking up the car so that the chassis will hang from the springs, and introducing flake graphite. One very good way to introduce the graphite is to mix it with thin oil, or even with kerosene, and then "float" the flakes of graphite in between the leaves of the springs.

The thin flakes of graphite, once introduced, become fastened to the minute irregularities of the bearing surfaces, and the squeak is cured for practically all time.

In vulcanizing a tire shoe, rub finely pulverized flake graphite upon the outside of the shoe and sprinkle a little in the mould, such a good job is turned out you can hardly tell that the tire has been repaired.

USE OF GRAPHITE

Editor The Automobile:

[1,973]—Will you please give me some idea of the way to use graphite on an automobile engine. Should it be put into the lubricator or into the crankcase direct, or should it be used in some other way?

Bensonhurst, L. I.

A. B. SEE.

Graphite should be mixed with the oil to go into the crankcase or splash system, and should never be put into the lubricator. The reason for this is that it (the graphite) seems to clog up not only the pipes leading to the bearings, but the moving parts of the pump as well. An excellent way to use it is to clean out the crankcase and then, when putting the oil back in or putting in fresh oil, use the graphite-oil mixture. To make this, add a teaspoonful of the purest, finest graphite obtainable to a gallon of oil. This sounds like a very small quantity, but it is a fact that a very small quantity is necessary. After mixing this very thoroughly (take plenty of time to mix it, as it is time well spent) pour it into the case. In actual running the graphite will reach the main bearings, which are the places where it does the most good, and then seems to give them a sort of very thin coating, which is glazed and which acts to protect the pins. A smaller quantity of the oil with graphite in it should be used than the ordinary clear oil. So, too, if the lubricator or pump is of such a construction that the graphite could be put into it with safety, the feeds can be reduced to about one-half of the amount usually used. That is, the addition of graphite to the oil allows of cutting the oil consumption in half, or of reducing the amount of oil used very materially. This, too, with very little graphite.

—*The Automobile.*

WHY FOAM IS WHITE

Beer is brown, but its foam is white. Shake up black ink and you get white foam. Shake up red ink and the result is the same. A body that reflects all the light it receives, without absorbing any, is always white. All bodies powdered into tiny diamond form, so that they throw back the light from many facets, absorb none of it and are white by consequence. Powdered black marble, for instance, is white. And foam is water powdered into these small diamonds, and hence its whiteness.—*New York Press.*



LUBRICATING THE INNER TUBE OF AN AUTOMOBILE TIRE

Soapstone is the common everyday lubricant used to lessen the friction caused by the rubbing of the inner tube of a tire against the outer tire or "shoe," as it is usually called.

That the friction between the tube and the shoe is considerable, is evidenced by placing the hand on the shoe after the car has been traveling rapidly for some distance.

Soapstone is a very finely powdered material which easily penetrates into the pores of any body with which it comes in contact, and where an excess is used, as is too often the case, the result is sometimes disastrous.

Several ways are mentioned by writers on automobile subjects to overcome any bad results, but the best suggestion of all is made by a man who has been using flake graphite for the past season. Now he won't even look at soapstone or talcum, or anything of that nature. Flake graphite, he says, is the ideal lubricant for inner tubes, as it is for so many other things and places. It makes a better and easier fit of the inner tube, it prevents heating and when thoroughly rubbed on the rim of the wheel prevents rusting and also prevents, quite largely, water from getting into the inner part of the rim, where it causes both rust and rotting of the cotton web of the shoe.



THE CLINTON VIADUCT

The accompanying illustration shows the Clinton Viaduct of the Boston & Maine R. R. The picture gives an idea of one of the many attractive views enjoyed by travelers on this well known New England Railroad.

The Clinton Viaduct has received a coating of Dixon's Silica-Graphite Paint, which has proved an excellent protective coating on hundreds of steel bridges in New England.

SEE that every bolt which is necessary to remove, is removable. The threads of all bolts should be smeared with flake graphite mixed in oil to paste-like consistency. This mixture should be applied also to the spark plug threads.

FLAKE GRAPHITE TO THE RESCUE

In their department, "Questions and Answers," *Gas Review* prints the following:

I have a four horsepower gasoline engine with hit and miss governor and gravity feed mixer, in which the air passing through raises the needle valve and lets the gasoline out. At times the engine will run for hours without missing a shot. Then it will begin to make weak explosions and finally stop. Sometimes, by opening the relief cock and leaving it open for a few minutes after starting the engine, it will work all right for an hour or so, when it will stop in the same way. At times even this fails to make it run right. The last two or three times it stopped I let it suck in a half a teaspoonful of flake graphite through intake, after which it ran all right for an hour or two.

Answer.—The trouble is undoubtedly in the mixer. It either lets down too much gasoline or else not enough. From the description it is not easy to tell which. If you will take it apart and clean out the dirt and make sure that the needle valve fits, you will probably have no more trouble with your engine. If the spark is all right and some of the explosions are weak and some strong, it shows a variable mixture. It also would seem that the piston rings might not be tight, or it may be that they are stuck down in their groove with a deposit of carbon. The fact that a little flaked graphite helped the performance of the engine would tend to show that such might be the case. We are inclined to think, in view of the action of the engine at other times, that the trouble is with the mixture.

HINTS IN WRITING

In "The Blue Pencil and How to Avoid it," by Alex. G. Nevins, we find the following which may aid some of us in our commercial letter writing.

Don't say "in order that he might," "in order to," "for the purpose of," when *to* would be sufficient. Never use a dozen words to say what one will express.

Don't say "good *shape*" for "good condition."

Don't use the word *per* except when it is part of a Latin phrase. *Per* day, *per* year, *per* yard, etc., should be *a* day, *a* year, *a* yard.

Don't say *balance* for *rest* or *remainder*. Use *balance* only in connection with accounts and weights.

Don't say *liable* to for *likely* to.

Don't say *state* for *say*, or *stated* for *said*.

Don't say differ *with*. You agree *with*, but you differ *from*.

Don't say "for sometime *past*," or *to come*.

The italicised words are superfluous, and superfluous words should be omitted.

Don't say *got* for *have*. *Got* should not be used to denote possession.

THE SMALL BOY AND THE GREEN APPLE

Dr. Harvey W. Wiley tells us that if the small boy gets the colic after eating green apples, it is because of the microbes on the skin—not because of the greenness of the skin. Not more than one in a hundred boys that eat green apples ever get the colic at all.

WHEN OLD AGE COMES

By BURGESS JOHNSON

If God grant me old age,
I would see some things finished; some outworn;
Some stone prepared for builders yet unborn.
Nor would I be the sated, weary sage
Who sees no strange new wonder in each morn.
And with me there on what men call the shelf
Crowd memories from which I cull the best—
And live old strifes, old kisses, some old jest;
For if I be no burden to myself
I shall be less a burden to the rest.

If God grant you old age,
I'll love the record writ in whitened hair,
I'll read each wrinkle wrought by patient care,
As oft as one would scan a treasured page,
Knowing by heart each sentence graven there.
I'd have you know life's evil and life's good,
And gaze out calmly, sweetly on it all—
Serene with hope, whatever may befall;
As though a love-strong spirit ever stood
With arm about you, waiting any call.

If God grant us old age,
I'd have us very lenient toward our kind,
Letting our waning senses first grow blind
Toward sins that youthful zealots can engage,
While we hug closer all the good we find.
I'd have us worldly foolish, heaven wise,
Each lending each frail succor to withstand,
Ungrudging, ev'ry mortal day's demand;
While fear-fed lovers gaze in our old eyes,
And go forth bold and glad and hand in hand.
—From *Harper's Magazine* for August.

DEADLY TUBE IS LOST

Finder Who Opens It Will Receive Frightful and Incurable Wounds

Sometime ago we read in the *New York Times* the excitement in Paris over one of the most curious cases of loss ever known. A gentleman left on a seat in an omnibus a tiny package valued at \$5,000. The peculiarity of the package is that it will injure for life the person who picks it up and opens it, being a tube containing salts of radium.

Although only one-sixtieth of a grain, its emanations are sufficient to cause fearful and incurable wounds. The fate of the finder who looks into the tube, which is the size of a cigarette, is certain.

No infernal machine was ever so frantically sought as this tiny tube by the Paris police. All the omnibuses were searched and swept, and urgent warnings were posted in public places. The newspapers united in advertising notice to the finder not to touch it.

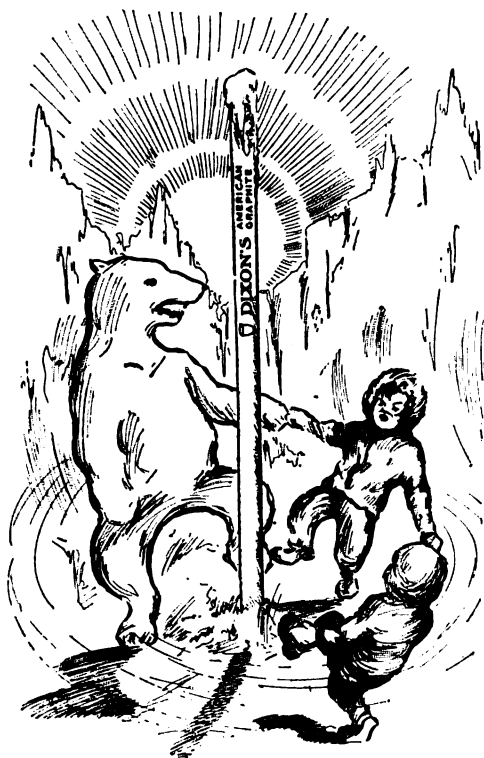
THAT is not a bad idea that someone has put forward in the daily papers—to have all holidays observed on the following Monday, except, of course, when the holiday falls on Monday.

An arrangement of this kind would insure a possible outing of two and a half days—now that a half holiday on Saturday is so general.

WHO DISCOVERED THE NORTH POLE?

Everybody seems to be eligible to this north pole discussion—some have even come in without knocking—so we are not out of order in rising to make a few remarks.

As you know, the controversy over the frigid regions is becoming quite torrid, though most of the matter seems to be located in the twilight zone. We have nothing whatever to do with polar affairs, nor are we biased as to the respective claims of the rival explorers, unless it may finally result in a far north settlement where the Dixon Pencils may be



successfully introduced. They are well known and popular about everywhere else and we feel that with our experience, skill, materials and methods, there need not be any pencil requirements unsatisfied.

P. S.—The thing that impresses us most in all this mix-up is that it has taken over three centuries to discover the north pole, dating from the first attempt. It only takes a few minutes to discover the excellent quality of Dixon's American Graphite Pencils.

GOOD EXCUSES

A school teacher recently received the following note:

"Dear Sir: Please excuse my son Jack from attending school today, as he has to be at the funeral of his two aunts. I will see it does not occur again."

The following direct, concise and conclusive note was received by a teacher from the mother of a pupil:

"Please excuse Ikey; he is dead!"

"Ikey" was a favorite in his class, and his loss was felt by the teacher and his classmates, so that the humorous side of the note was not considered. A few days later the following excuse for a pupil did not call for the same restrictions. It read:

"Please excuse Mary as she had a pain in the forenoon."

—*Exchange.*

ROLL NECK LUBRICATION

The following was received by our Philadelphia Office from one of the prominent iron and steel companies:

"The sample of grease for cold roll necks is received. After two days trial, we are pleased to say that it is the finest thing we have ever used for this purpose, and we would like you to submit prices."

It will pay all steel companies to investigate and get acquainted with the Dixon Flake Graphite Lubricants, and we are confident that they will find them most economical and efficient for any work.

"WHAT CAN I FIND FOR MY BOY TO DO?"

Mr. A. C. Marshall says in *American Industries* that the above question is one which is asked thousands of times a day by anxious parents. Once a boy could be apprenticed to learn a trade—not so now. Organized labor works the ruin of hundreds of thousands of young men by preventing them from learning a trade. From this class come the inmates of reform schools, workhouses, jails, and penitentiaries. Statistics demonstrate this fact conclusively. Depriving boys of the right to learn a trade drives them into idleness, and idleness leads to crime. Not content with this great wrong which leads to the boy's debasement, organized labor follows him to the reformatory and penal institutions, and forbids his working at any industry the product of which comes in competition with goods made by organized labor.

PROTECTING MOTOR CAR CHAINS

The chain should be cleaned often, depending upon the weather and the amount of use, of course. Never oil the links when the chain is on the car. If the chain is very dirty, give it a bath in kerosene oil, working all the dirt and grit out, and then use graphite. This does its work in a dry state and if well worked into the links, little or no dust can get inside the rollers.—(*The Power Wagon.*) *Brewers' Journal.*

MAN has no right to question woman's age—to even think about it. A woman, bless her, is as old as she makes out, or makes up, and not a day older. Man is out of his latitude when he begins trying to locate woman's age longitude. It is her privilege to conceal her age in any form or manner she may choose, and it is man's prerogative to assist her as much as possible rather than hinder or question her in any way. Man owes it to himself to see that she is supplied with every means of concealing her age, or any new wrinkle which she chooses to keep from the gaze of the overcurious public.

Man is not supposed to be young or beautiful. He couldn't be if he wanted to be, and wouldn't be if he could. With woman it is different. She wants to be, and can be, and is, whether she wants to be or not, and it is a whole lot better for her and for her admirer, or admirers, as the case may be, that her age be carefully guarded under that charming veil of mystery which should ever be hers by right of possession. Forget that she has an age, brother, and you will be happier, and so will she, but don't, for heaven's sake, forget that she has a birthday.—*Boston Herald.*



"The girl behind the counter" knows what to give you when you ask for a good pencil at a consistent price.

She knows that

DIXON'S American Graphite **PENCILS**

mean more sales for her because of the satisfaction the pencils will give you.

What makes Dixon's Pencils so good? Care chiefly. Care in all the little details that make for perfection.

Many of the heads of departments in our pencil factory have spent a large part of their lives in making Dixon's Pencils.

There's a sort of subtle satisfaction in writing with Dixon's Pencils—try one and get the sensation.

JOSEPH DIXON CRUCIBLE COMPANY,
Jersey City, N. J.

GRAPHITE

VOL. XI.

NOVEMBER, 1909.

No. 11.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

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RULES FOR THE ENGINE ROOM

The following humorous set of rules will be appreciated by the engineer. The matter was clipped from the *Publicity Magazine*, published by the Under-Feed Stoker Company.

1. When you enter the engine room, spit on the floor. We have water, lye, soap, mops and brushes, and we will clean up as soon as you leave.
2. Rub your hand on all polished work. It will give some one work and use the surplus polish.
3. Put your hand on the engine's bright work. You will then know if it is smooth, hot or cold. Tell others to do the same.
4. Stay in the engine room as long as you please. The engineer has

nothing to do but entertain visitors.

5. Be sure to tell the engineer if his engine is pounding or running right, as he will not know it unless you do. He will stop and make repairs while you wait.

6. Don't tell the engineer who you are. He is a mind-reader, and already knows you. Go anywhere in the engine room and you will please him.

7. Advise him what to do, as you know best. The engineer is only there every day and does not have any chance to see as much as you will in an hour.

8. If the engineer is busy making repairs, tell him a good story you heard the other day, and if possible get in his way.

9. Be sure and tell all you know. It won't take long.

10. Call again, and repeat as above.

11. Clean your feet when going out.—*Exchange.*

WE so frequently hear of broken automobile springs that we may well pay attention to what Mr. J. R. Kingsley says in *The Horseless Age*. He tells us that the one great, great item often overlooked is the springs.

When dismantled they should be separated, sandpapered smooth and a layer of graphite paste put between each pair of leaves, and the ease of their working thereafter will please you, and when you are out in a rainstorm rust will not ooze out to mar your paint.

The use of flake graphite about an automobile has been too sparing in the past.

THE VACUUM BOTTLE

Why will the liquid in a vacuum bottle, or in any other vessel, remain cold three times as long as the same liquid will remain hot?

Power and The Engineer says the reason why, can best be explained by a water analogy. First, perhaps, a little study of relative temperature is necessary.

If, on a hot day, with the mercury at 92 degrees Fahrenheit, a freezing liquid (32 degrees Fahrenheit) be put into a vessel, the liquid's temperature must rise sixty degrees in order to reach the temperature of the surrounding atmosphere. If, on the other hand, a boiling liquid (212 degrees Fahrenheit) be placed in a vessel with the outside temperature at the freezing point (32 degrees Fahrenheit), the liquid's temperature must drop 180 degrees to reach the atmospheric temperature. Thus a hot liquid on a cold day has three times the difference in temperature between itself and the surrounding air, that a cold liquid has on a hot day.

And now comes the application of the water comparison. As every engineer knows, or should know, the pressure of water varies directly as the "head." Thus the pressure of a three-foot column is three times as great as that of a one-foot column. Heat acts the same way. The difference of 180 degrees exerts three times the pressure, or tendency to change, that a temperature difference of sixty degrees does. Thus the 180-degree change will take place in one-third the time required for the sixty degree change.

It may also be well to remember that cold is merely an absence of heat. Thus when a body becomes cooler, the heat is leaving it, and when it becomes warmer heat is entering it. Also, under equal conditions, heat will enter or leave a body at identically the same rate of speed.

NOVEMBER AND THANKSGIVING

The month of November immediately suggests Thanksgiving. While in our matter-of-fact day, to call it by no worse a name, Thanksgiving ceases to carry its first significance, still it does retain a sentiment absent from most of the nation's holidays.

And by the way, did you know that Thanksgiving is not strictly the "nation's" holiday? There are two states that do not observe the day, Kansas and Minnesota. Whether Kansas and Minnesota have nothing to be thankful for, or whether they do not care for turkey does not appear, but the fact of their failure to observe the day remains.

To the rest of our readers, however, we wish a bountiful feast and a full heart—a thankful Thanksgiving.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

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GRAPHITE FOR LUBRICATION

"In the July 6th number is an article on "Graphite for Lubrication," which calls for special comment. It seems odd to the writer that there can be engineers and millwrights who are as yet unfamiliar with the many uses that graphite can be put to, and how much work and worry the judicious use of it will save them. I have been using graphite for fifteen years. In rolling-mill work, on shipboard (lake and ocean), in refrigerating and cold storage and ice plants, on heavy air compressors during the construction of the Chicago drainage canal, in gas engine plants, around gaskets, tube plates and nuts, etc., on many kinds of boilers—in fact, every piece of machinery I have handled, I have always had to use graphite at some time or other. While my experience has been more with flake graphite than with the finely pulverized or amorphous form, owing no doubt to the great faith I have always had in the flake or pulverized flake, and being a little shy of trying

the amorphous kind until recently, say a year ago, when I gave the amorphous kind a good trial; and although it is almost an impossibility to determine whether the flake or the amorphous (if used to cool a warm bearing of any size) does its work quicker, still my personal opinion is that the flake manages to stay on the wearing surfaces longer and thus accomplishes more in the nature of reducing friction than the amorphous form, as the latter promptly passes through the bearing with the oil, while the flake is held and rubbed into the wearing surfaces."

The foregoing was taken from a recent issue of *Power and The Engineer*.

As pointed out, amorphous graphite quickly passes through the bearing with the oil, thereby failing in great measure to fulfill the purpose for which its use is intended.

In contrast to the action of amorphous graphite, which does not settle readily in oil, flake graphite quickly becomes attached to the bearing surfaces and friction troubles are soon cured.

TREES THAT EXPLODE

Our Mr. Haasis calls our attention to an article under the above heading that appeared in the *Philadelphia Bulletin*.

"All lightning blasted trees explode as overcharged boilers do. The flame of the lightning does not burn them up, nor does the electric flash split them like an axe. They simply explode overcharged, as may be a boiler with steam.

"The lightning is conducted into the damp interstices of the trunk and into the hollows under the bark. Its tremendous heat at once turns all the moisture in those cramped spaces into steam. This steam in its immediate explosion blows the tree asunder."

This is exactly what happens in the walls of a graphite crucible when a "scalp" occurs.

Should moisture be present in the crucible, and this is sure to be if the crucible has not been at a temperature of 250° Fahrenheit for at least forty-eight hours, before being placed in the fire, for the heat from the fire at once turns the moisture into steam and, presto, a portion of the crucible will fly off, as water when converted into steam requires 1,600 times more space than it required when it was simply moisture.

After all this happens, then the crucible manufacturer is pretty sure to get a letter from the user saying, "your crucibles are not good."

Unfortunately for the crucible manufacturer, the owner of the foundry or the man who buys the crucibles, does not always know just how the crucible has been used in its foundry.

LORD CHARLES AND THE DIXON PENCILS

The following is an extract from a letter from Mr. C. M. Harding of the Dixon School Department, who was in charge of the Dixon Exhibit of pencils, crayons, erasers, etc., at the Canadian National Exposition, Toronto, Canada.

"Lord Charles Beresford and the Mayor of Toronto spent ten minutes at the Dixon Exhibit today. The Lord Admiral was fooled with the Dixon "Slick" Pencil, and then signed our register.

"This hobnobbing with the nobility is not exactly in my line, but a Dixon School Man must be ready for anything."

PREVENTING CORROSION OF STEAM MACHINERY

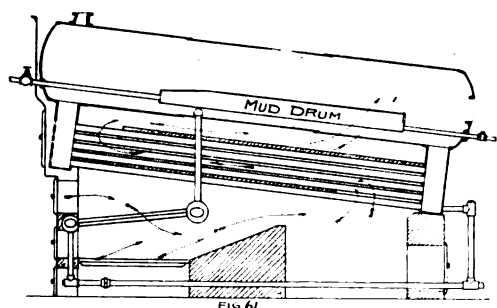
By W. H. WAKEMAN

Chapter XVIII

Having divided all water tube boilers into two classes, placing the vertical kind in the first class, for convenience in numbering only, and giving them due share of attention, it is now proper to describe a few of those belonging to the second class, which are so classed as a matter of convenience, and not because they are inferior to the vertical kind.

Fig. 61 is a sample of this class, consisting of a steam drum or shell extending the entire length of the structure. A water leg is riveted to the lower side at each end, into which straight tubes are expanded. These tubes are made of comparatively thin material and the advocates of this form of construction claim that inasmuch as the larger part of the heating surface of such a boiler is located in the tubes, the results must be more satisfactory than where the shell of a tubular boiler acts as the medium through which heat is transmitted. Due attention has already been given in these chapters to the difference between thick and thin plates, so far as their efficiency in transmitting heat is concerned, so that it is not necessary to repeat those conclusions.

It is true that a larger part of the heating surface of a water tube boiler is found in the tubes, but the same is true of the return tubular boiler, therefore they are on an equal base, so far as this point is concerned.



Another claim made for the horizontal water tube boiler is that soot and ashes collect on top of the tubes, while heat is applied to the lower side which is comparatively clean. It is pointed out that when a certain amount of dirt has collected on a tube, if more is added it will fall off, whereas, it can collect in a fire tube until the passage way is entirely closed, all of which is true, but when there is enough dirt on a water tube to prevent more from sticking, the efficiency of it is rendered very low and it should be cleaned without delay. Flames envelop a water tube, hence if a large part of it is rendered useless for the transmission of heat it cannot be effective in every day service. Soot and ashes collect in the bottom of a fire tube, leaving the upper part comparatively clean until the tube is more than one-half full. In this connection it is well to remember that heat naturally works upward, hence the upper part of a fire tube transmits a large part of the heat applied, consequently so long as it remains clean its efficiency is not reduced. A fair and unprejudiced consideration of the whole subject leads to the conclusion that the fire tube and the water tube boilers are on an equal basis in this respect.

Fig. 61 has a feed pipe entering the front head and extend-

ing through the rear head, but of course there is a blow-off valve on the outside to prevent water from passing directly to the sewer. Feed water enters this and passing into the mud drum (which in this case is an enlargement of the feed pipe), the mud settles at this point because the water is only allowed to pass out at the top. When the feed valve is shut and the blow-off valve is opened, the accumulated mud is blown out rapidly. There is also a blow-off pipe fitted into the lowest part at the rear, and one in the front, as shown.

The illustration shows an ordinary grate in the furnace, and another above it through which air circulates, coming in at the top and going out at the bottom.

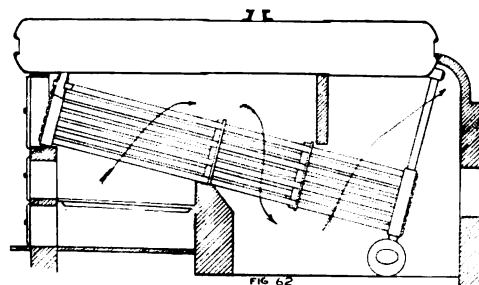


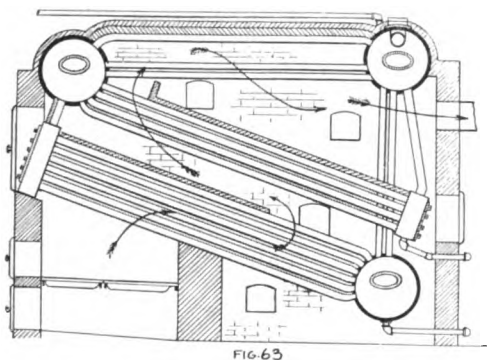
Fig. 62 illustrates a boiler consisting of many water tubes set at an angle, with a horizontal shell above them. Every boiler of this class is just as liable to explode and cause much damage as a return tubular, because both are fitted with a shell on which steam pressure acts in precisely the same way. The only difference is that the water tube boiler is usually fitted with a shell of less diameter (for a given power), and will carry a higher pressure accordingly. Nevertheless, when this shell becomes weakened by corrosion, or perhaps was not fitted with properly designed joints, it becomes more dangerous than another kind that is not claimed to be exempt from possible explosion, because a higher pressure is put upon it, which will cause greater disaster when it does fail.

It is both amusing and surprising to note the large proportion of men in charge of steam plants who claim that a large boiler is safe under a higher pressure than it is proper to carry on a small one, even if the shells of both are of the same thickness, are made of plate having the same tensile strength, and are fitted with riveted joints that contain an equal percentage of strength of the solid plate. Such a conclusion is illogical and incorrect. It is evidence of ignorance on the subject, both theoretically and practically. Standard rules for determining the safe working pressure of steam boilers, conclude with the following sentence. "Divide by one-half of the diameter." If the shell is 72 inches in diameter the divisor is 36, giving a small quotient, but if it is 36 inches, the divisor is 18, therefore the quotient is twice as much as before.

It is evident that a piece of iron or steel will stand a certain stress before failure ends a test. It is equally plain that so long as the pressure on a boiler is computed on the square inch, each linear inch on the diameter causes a strain on each inch lengthwise of the shell, that equals the pressure per square inch. It naturally follows that so long as the total that can be allowed is a fixed quantity, if the number of inches is large the pressure per inch must be small, as when they are multiplied together the product equals the limit above mentioned.

So long as the safe pressure is much lower than the bursting pressure, depending on the factor of safety that the engineer deems proper to adopt, the limit is of course lowered accordingly, but that makes no difference with the principle involved.

Fig. 63 shows a boiler having two sets of inclined water tubes, one of which is expanded into a mud drum at one end and a header at the other. The second set extends from a steam drum at the front to a header at the rear. Another steam drum is located directly above the mud drum and these drums are connected by vertical tubes. The two steam



drums are located on a level, therefore the tubes which connect them are horizontal. This includes tubes set in three different positions, giving the greatest possible variety. It also permits thorough and rapid circulation of water at all times, which is a valuable feature.

On nearly every boiler that is enclosed by a brick setting, there is a place where the iron or steel must move more or less, while the masonry remains stationary. This requires a flexible joint to prevent the boiler from throwing down the brick work, and at the same time allow a free movement of the tubes and shell. Tow covered with fire clay is mentioned by some engineers for this purpose, but if it is thoroughly impregnated with Dixon's Crucible Mixture it will give good results, and if asbestos is used instead of tow it forms a combination that is practically heat proof.

(To be Continued.)

ELECTRICITY AS AN ANESTHETIC

Dr. Tuffier, of the Beaujon Hospital, Paris, has discovered that anesthesia can be produced by electricity; he employs in his treatments a battery of 40,000 milliamperes strength. This new application of current has made a great stir in medical circles abroad. Anesthetics now in general use, while mercifully deadening pain, cause unpleasant reactionary symptoms, and their use is always attended by some degree of danger, particularly in cases where weak heart or lungs are involved. Electricity has the same effect of producing unconsciousness, but with no reaction or danger whatever.

—*Bulletin of N. Y. Edison Co.*

MANY tests have been made on divisions of important railroads to determine the value of Dixon's Graphite Air Brake and Triple Valve Lubricant, and all have been found highly satisfactory. We shall be very glad to give detailed information to anyone interested.

GRAPHITE KETTLES FOR GALVANIZING

Experiments that have been going on for some time at one of the large steel wire mills of the United States, with graphite kettles for holding the molten spelter, have proven successful and it is quite probable that they will be extensively used.

Iron kettles are rapidly attacked by the melted spelter and not only is the kettle finally ruined, but the spelter itself becomes saturated with iron and has to be sold for dross. The use of the graphite kettles will obviate this difficulty. The kettle will not be attacked by the spelter, and therefore the spelter will make but little dross.

The method in use for holding the kettles is quite novel. In order to prevent the graphite on the surface from burning out, a second kettle of sheet or cast iron is made to fit over the outside. A space of a few inches is left all around the outside between the two kettles. This space is filled with molten lead. This effectually prevents the air from coming in contact with the outside of the kettle and thus burning out the graphite.

Kettles that have been in use for six months were recently taken out and they had deteriorated but very little. The lead had protected the outside effectually. The inside was protected by the spelter itself.—*Brass World*.

DIVERSITY IN HUMAN OPINION

It is a peculiar but obvious thing, this diversity in human opinion. There seems to be hardly a single proposition on all the phases of which any two people will fully agree.

The average individual can usually see but one way. Of course, every one must have a definite view on a subject and coming to this view as reasonably and rationally as he can, he must consider it correct. But the broad-minded individual is a sort of dual personality. While he has faith in his own opinions, his higher intellectuality recognizes the same possibility of error in his own views that he so easily distinguishes in the opinions of others.

This idea was very aptly expressed by Professor William James in an article on "Psychics," in the *American Magazine*. It seems that Professor James is somewhat inclined to believe that there is "something in" psychical phenomena. But the orthodox scientist refuses all psychical demonstrations. In comparing himself with an orthodox scientist, Professor James says: "Either I or the scientist is of course a fool, with our opposite views of probability here; and I only wish that he might feel the liability, as cordially as I do, to pertain to both of us."

WE speak of the redness of the morning and of the evening sun, but how many of us give thought as to why the sun is red? Red rays have a slower rate of vibration than the rest of the spectrum, and they have a greater power of penetrating fog or haze. For this reason on a foggy night, light which appears almost pure white when close at hand becomes yellowish and then a deep red as it moves off into the distance, and the mist obstructs the rays of the other colors.

Red glasses do not create red rays—they do not turn rays of other colors into red, they act only in the capacity of a filter permitting none but the red rays to go through, thus diminishing the total light giving effect of the lamp.

IN EARNEST THEN

"I have noticed," said the offhand philosopher, "that a woman will get a golf dress when she has no intention to play golf."

"That's so," agreed the man with the incandescent whiskers.

"And," continued the offhand philosopher, "she will get a ball gown when she cares nothing about dancing, and a tennis dress when she wouldn't play tennis for fear she will freckle, and a bathing suit when she has no thought of going into the water, and a riding habit when the very thought of climbing on a horse gives her the chills, and—"

"Yes," interrupted the man with the incandescent whiskers; "but when she gets a wedding dress she means business. Ever notice that?"—*Exchange*.

RHYMED REVIEWS

"THE MAN IN LOWER TEN"

(By MARY ROBERTS RINEHART.—The Bobbs-Merrill Company)

A murder in a Pullman car!
Our Hero strangely implicated!
Then, all at once, a rending jar—
The train is quite obliterated.

A bold adventuress or two,
A handsome wretch, a hint of scandal,
A bloody necklace (Ha! a clue!),
A dagger with a Dago handle.

Ah, fear all writers bearing gifts!
Beware of sleuth and legal pleader!
Their doubtful sleights and sudden shifts
Are merely blinds to fool the reader.

Who killed "The Man in Lower Ten?"
This great ado is very funny
To us who know that with her pen
The Author did it!—motive, money!—*Life*.

AUTOMOBILE tires frequently become very much heated during a long and fast run. In many cases the heating is due not only to the natural friction between the rubber and the inequalities of the road bed, but also between the inner tube and the casing.

The heating between the inner tube and the casing may be largely eliminated by rubbing a good quality of finely pulverized soapstone or talc on the canvas of the casing and over the inner tube before it is inflated. Better still is the practise of rubbing Dixon's Flake Graphite on the canvas where it will adhere permanently. The graphite would be better than the soapstone or talc for the inner tube, but its blackness on the hands is objectionable to many.

WAS IT MUCH OF A FISH?

One of the Dixon boys who occasionally goes fishing in one of the Jersey lakes, replies as follows when asked what size fish he caught: "The head was $\frac{1}{3}$ the length of the body, and $\frac{3}{4}$ of an inch longer than the tail, while twice the length of the tail was $\frac{1}{2}$ of the length of the body."

THE CONSUMPTION OF LUBRICANT MEASURES CIVILIZATION

Of course, while we are ready to claim that we have had this idea for a long time, and that the same idea focused on Dixon's Ticonderoga Flake Graphite, yet we are quite as ready, and possibly more so, to acknowledge that no one could have given expression to that idea quite as well as that inimitable chap, Elbert Hubbard. He says, "A lubricant symbolizes movement, speed—power applied in safety. The wheel is the only mechanical appliance that is not suggested by something in nature. The use of wheels means the necessity of a lubricant—otherwise, the hot box, a stopping of traffic, and the use of language unfit for publication."

The use of Dixon's Ticonderoga Flake Graphite means smooth and perfectly lubricated bearings and wheels, and a sense of safety and assurance to all who have anything to do with the matter.

THE following letter comes to us from Mr. J. N. Battenfeld, Vice President and General Manager of The Berkshire Manufacturing Company, Cleveland, Ohio.

CLEVELAND, O., Sept. 10, 1909.

"Replying to your valued favor of Sept. 8th., we are pleased to inform you that the Dixon Graphite Brushes you furnished us sometime ago, are doing all you claimed for, in fact more. We applied these brushes to 10 horse-power motor attached to a planer. This motor was in bad shape, as it was somewhat cut from the old brushes we used. Since putting these brushes on, it not only has given the very best results, but put the commutator in better shape than it was, thus saving us the necessity of repairing same.

"You are at liberty to use this letter whenever and wherever it may be of benefit to you.

"BERKSHIRE MFG. CO.,

"J. N. BATTENFELD, Vice Pres. and Gen. Mgr."

It will pay you to become familiar with the Dixon Graphite Brushes if you are not acquainted with them.

VARIATIONS IN SUN HEAT

Until recently it was taken for granted that the heat given out by the sun was always the same in amount, not differing one day from another, or one year from another. But it has been finally ascertained through a long series of experiments, that the amount of heat given out by the sun is constantly varying, and that at times it is not less than one-sixth greater than at other times, a difference amply sufficient to account for exceptionally cool summers or warm winters on the earth. Indeed, there can no longer be any doubt that we owe our weather to a great extent to the solar luminary, and our government is at present engaged in a painstaking study of the subject in the observatory on Mount Whitney, Cal., the expectation being that when it has come to be more fully understood, science will be able by observation of the sun's activity to make forecasts of meteorological conditions for at least six months in advance.—*Reader Magazine*.

SOME men are born successful engineers—and some achieve success by using Dixon's Flake Graphite.

WHAT NEGLECT OF PROPER LUBRICATION MEANS

In the summer of 1908, a man with an automobile of well known make and of high class, made a trip of 1,500 miles through the mountains of New England. There were no delays, and the man and his party had a most enjoyable time.

In August 1909, it was decided to repeat that trip. Everything and everybody was the same as in 1908 with the exception of the chauffeur—a new man.

From the day they started out there was nothing but trouble—too much oil fed to the cylinders and too little lubricant to the bearings. Tires not properly inflated—inner tubes put in without soapstone or graphite and “pinched.” In fact, things were as bad as could be and the real reason not discovered until the party were back again and the car overhauled.

Then it was found that the new chauffeur had attended country dances, and had been having a good time on his own account while the machine had been shamefully neglected.

If the owner does not possess the requisite mechanical knowledge to enable him to tell whether his machine is having proper care or not, he should be very careful in the choosing of his chauffeur.

MONONGAH, W. VA.

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

GENTLEMEN:—

Samples of No. 1 Graphite, Graphitoleo, pencil booklets received day before yesterday. Accept thanks for same, will say, I will put it all out to the best advantage for Dixon's interest, and hope it will show up well when the opportunity arrives.

I never feel surprised at anything pertaining to graphite. I know that it is no luxury, but a necessity. I have tried it too many ways to see where the “flaw” was, but the “flaw” never showed up.

For instance, in 1900 I put down about 550 feet of two inch pipe and the same amount of $\frac{3}{4}$ inch pipe, the former for water and the latter for steam. I took an old tomatoe can and put about one pound of flake graphite in it, (yes, of course it was Dixon's), and then put in enough good cylinder oil to make a thick paste. Every joint, thread and coupling was first cleaned—rust, dirt and other foreign matter all being cleaned off, then I painted the threads on both pipe and collar or coupling, as some call it, and screwed the pipe together; *now listen.*

Last month (August), about one third of this pipe was taken up—both sizes—as the boiler and tank were moved closer to the pump, all pipes were more or less badly eaten or pitted, especially steam pipes, but the joints were one and all perfect. Not a rusty spot in the whole bunch, and they came apart surprisingly easy. And this after 112 month's service. The reason for this miracle was simply because Dixon's Flake Graphite was sparingly used on the joints, thus protecting them against the elements and usage, that is why Dixon's products are called standard to go by.

A friend of mine told me several days ago that the reason a woman always was gifted with the “gab” of speech, was because she always has a pencil in her mouth or about her some

way, thus she was continually soaking graphite into her, and naturally she would be easy with the operation of her tongue, etc, etc.

Should you ever get any skeptics or unbelievers concerning your graphite products, simply refer them to me or me to them, that is all.

Again thanking you and hoping that our relations will always be as pleasant in the future as in the past, I am,

Very truly yours,

H. C. FABER.

GOOD MORNING

Good morning, Brother Sunshine;

Good morning, Sister Song.

I beg your humble pardon

If you've waited very long.

I thought I heard you rapping;

To shut you out were sin.

My heart is standing open;

Won't you

walk

right

in?

Good morning, Brother Gladness;

Good morning, Sister Smile.

They told me you were coming,

So I waited on a while.

I'm lonesome here without you,

A weary while it's been.

My heart is standing open;

Won't you

walk

right

in?

Good morning, Brother Kindness;

Good morning, Sister Cheer,

I heard you were out calling,

So I waited for you here.

Some way I keep forgetting

I have to toll and spin

When you are my companions;

Won't you

walk

right

in?

—J. W. FOLEY.

A PREACHER came along Main Street the other day, it was very evident that he was a stranger in the city, for he walked up to some boys that were playing and said to one of them:

“Little boy, can you tell me the way to the postoffice?”

The boy said: “Just keep right up this street about five blocks.”

The preacher said: “Boys, don't you know that it isn't right to play marbles in the street? Come with me and I will show you the way to Heaven.”

One of the youngsters said: “Oh, come off, you don't even know the way to the postoffice.”—*Orpheum Joke Book.*

CYLINDER LUBRICATION OF AIR COMPRESSORS

In lubricating the interior of an air compressor cylinder, the existing conditions are different from those found in a steam engine cylinder. In the latter, moisture is always present and has a tendency to wash the oil from the surfaces. In the compressor cylinder, the heat is dry and the oil adheres to the surfaces better and longer, so that less oil is required than in a steam cylinder. Owing to the more intense dry heat, however, to which the oil is subjected, it must be of such a nature that it will not volatilize or form a coating of carbon in and around the discharge valves of the compressor. If the oil is too low in flash test, the oil on reaching the highly-heated cylinder will vaporize and pass out with the air without affording any lubrication to the wearing surfaces. If the oil is too dense or is compounded with animal or vegetable oils, it will have the tendency to adhere to the discharge valves and passages, and being subjected to the dry heat of compressed air, it will gradually become changed to a hard layer of carbon which will in time completely choke up the air passages and make the valves inoperative. Very little oil is therefore necessary, but it must be of the proper kind, it being the surplus oil that gathers around the valves and in the passages and being burnt causes the trouble.—*Power*.

AMERICA'S PROGRESS SYMBOLIZED BY AUTOMOBILE DEVELOPMENT

Is there anything that more completely reflects the temperament and the tireless, nervous energy of our people than the American history of the automobile's progress? A development which, as I recall the first visible signs of that industry's native effort, seems incredible, for it covers a period of only a dozen short years. Add a few years more and we have the beginnings of the bicycle. How very well I remember the arrest which followed the first attempt of an enthusiast to ride a bicycle into Central Park—and that man is now living, hale and hearty, and still riding.

Twelve years ago the automobile was a horseless carriage with no springs fit to be called such, no pneumatic tires and an odor which overcame the occupants of the vehicle as well as the hapless and surprised pedestrians along the road. To ride in it was like unto the sensation of sitting over the busy spindles of a cotton mill. Then it was the toy of the rich. Now it has become such a convenience as to be a luxurious necessity.

Ten years ago about 100 cars represented the annual output of America. Last year something like 35,000 cars were turned out, at a value of \$100,000,000.

—CASPER WHITNEY in *The Press*.

HEATING POWER OF WOOD

Contrary to a widespread belief that hard woods give more heat in burning than soft varieties, the scientists at Washington are contending that the greatest heating power is possessed by the wood of the linden tree, which is very soft. Fir stands next to linden and almost equal to it. Then comes pine, hardly inferior to fir and linden, while hard oak possesses eight per cent less heating capacity than linden, and red beech ten per cent less.—*Domestic Engineering*.

THE MOON AND THE WEATHER

In an address of more than usual interest, delivered at the Meteorological Society by Mr. Richard Inwards, the president, the numerous fallacies which prevail with respect to the weather were exposed. The moon is very generally supposed to have a direct influence upon the weather; but as Mr. Inwards shows, the influence is merely supposititious. As long ago as 1774, Dr. Horsley examined the weather tables of that year as furnished by the Royal Society, and out of forty-six changes of weather only ten occurred on days of lunar influence, only two of them being at the new moon, and none at all at the full. As a result of twenty year's observation, M. Flarguergues, of Viviers, found that the barometer readings, taken when the moon was farthest from the earth, averaged 755 millimeters, and when nearest, 754 millimeters, showing a difference of one millimeter, or .04 inch, and this in a direction against the theory, the pressure being greater by that amount when the moon was farthest from the earth. The cycle theory, such as that advocated by Mr. MacKenzie and more recently by Mr. Hugh Clements, has, we are told, broken down, and there is no definite period after which the weather changes repeat themselves. The moon's influence on the weather is negligible, M. Flammarion tells us, and the ideas that the full moon clears away clouds, that beans should not be sown or trees cut down on the wane of the moon, that two full moons in a month will cause a flood, or that to see the old moon in the arms of the new one brings rain, are all, to use an expressive phrase, mere moonshine. They are not only not supported by scientific observation, but are opposed to observed facts. The heat reaching us from the moon would only affect our temperature by twelve millionths of a degree, and the atmospheric tides caused by the moon would only affect the barometric pressure by a few hundredths of an inch—a quantity far less than the changes which are always taking place from other causes. Even the influence of the halo round the moon has been discredited, for observation shows that it is as often followed by fine weather as by rain. Altogether, the influence of the moon may be summed up in the words of the old rhyme—

The moon and the weather
May change together;
But change of moon
Does not change the weather.
—*Newcastle, Eng., Chronicle*.

THREE GREAT MEN

Victor Hugo, enumerating the world's greatest men of genius, mentioned Dante for Italy, Shakespeare for England, and Beethoven for Germany. Beethoven represents modern man in his highest aspirations, and never has he excited a more living interest than to-day.

—From the *Paris L'Europe*.

A PROMINENT railroad man said to one of the Dixon men: "There is one paper that reaches this office that I always read, and that is GRAPHITE. While it has much of instruction, it is not overloaded with dry reading matter, but contains many bright little paragraphs. I must confess some of the other papers that I receive reach the waste basket."

COTTON PICKIN TIME

When de mustang grapes hez ripened, en de punkins is immense,

En de juicy watahmillion 'gins ter look "lack thirty cents;"
When de fiel's is wite wid cotton, en dey 'gins ter schuhk de cohn,

En de summer, hit's jess leabin, en de autumn's comin on;
When de nights is gittin coolish, en de days is jess sur-plime,
Den us niggers has ter hussle, for it's cotton pickin time.

Hass ter gib up "craps" en "shin-diggs"—has ter say: "Ole town, good-bye."

Hass ter hunt up dem dat owes us—*hass ter leab 'em wid er sigh!*

Has ter pay our debts—er promise dat we'll pay when we comes back.

Den we gits into de waggin, wid our cloes done in er sack,
En we hikes out to de contry, ware wile mawnin glories climb,
En we gits dere all a-singin—in de cotton pickin time.

En den yeahly in mawnin, wen de dew is on de grass,
We gits up en eats our breakfus, en den to de fiel's we pass.
Dare I meets ma gal, Malindy, er ma Susy Ann, er Mame,
En wile we is pickin cotton, we is coatin jess de same.
Den some coon strikes up er "rag-time," en de udders in hit chime;

En we busts de air wide open—wen it's cotton pickin time.

En at night de wile kiyotes seyendaes us wid deir howls,
En sets all de dawgs a-barkin. En de hootin ob de owls
Makes de skeery women shibber. Den some nights we calls de dawgs,

En we hunts de coons en possums in de trees er hollar lawgs.
En we *gits 'em, too*, ma honey, eben wen we hass ter climb!
En dey's cooked nex day fer dinner—in de cotton pickin time.

Wen de days gits short, en cooler, we goes out into de wood,
Ware we skeers up squir'ls en rabbits, dat is lookin roun fer food.

Er perhaps we goes a-fishin, er we gethers up pechans,
Wich we eats aroun de chimbley, while we tells each udder yahns.

Er some nights we makes 'cohn candy, en swaps lies tell hit's er crime;

Er we laughs en does de cake-walk—wen it's cottin pickin time.

Wen de cotton pickin's ober, we goes back ter town ter spen'
All de money made wid pickin. Wen we runs ergin er frien',
We pertens ter walk lop-sided, all fum ca'yin so much dough,
Een we brags tell he feels sorry he stayed home, en didn't go.
Dese yere trips into de country leabs us niggers feelin prime,
En we allus likes de comin ob de cotton pickin time.

—HENRY ANTONIO MOOS.

THE WORDS graphite and the Joseph Dixon Crucible Company are inseparable. In fact they are considered by many as synonyms. The following which appears in one of the automobile instruction booklets illustrates this clearly. "The transmission case should be filled with this oil to within about four inches from the top, and it is a good plan to put in about a tablespoonful of good graphite (Dixon's No. 635)."



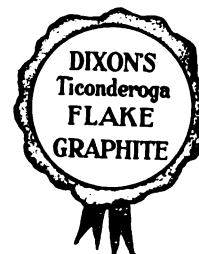
Old-Timer Talks No. 6

Maybe you've had trouble off and on with your air pump. There's a pretty severe strain on 'em with the heavy trains and high speeds nowadays. Pumps are apt to squeal or groan, overheat or labor; and packing rings wear and leak when they shouldn't.

Here's where Dixon's Special Graphite No 635 cures every time. Just take about a teaspoonful of the graphite and mix it with a pint of the regular oil. Use a little of this mixture at different times through the pump oil cup. As the boys say, you can't beat it.

There's no secret about Dixon's Flake Graphite; lots of the boys use it now. Nothing like it when it comes to friction troubles of any kind. Why don't you write for sample No. 190-P? It's free for the asking.

Joseph Dixon Crucible Co.
Jersey City, N. J.



HOW LEAD PENCILS ARE MADE

One of the most common things in use today is the lead pencil. Quite frequently they are given away, especially by those who use them as an advertisement, with their name printed upon them. In the schoolroom they are in almost universal use; having entirely crowded out the slate pencil.

Yet it is not a long time since a lead pencil was quite a rare thing. It was a distinction for a boy to have one, or rather the remains of one that had been whittled away. For a man to have more than one at the same time was almost an extravagance. To lose one's pencil was a real loss.

The first lead pencil maker in the United States, as far as we know, was William Monroe of Concord, Mass. He was a cabinetmaker by trade, but his business in that line being slack because of the war with England, he tried his hand at making pencils. On July 2, 1812, he took a sample of thirty pencils to Boston, and in a little time he sold them all. With varying success he continued to make more, and soon he had quite large orders, too large for him to fill. He did his work in secret in a little room of his house, and no one but his wife was allowed to see the process.

As early as 1827 Joseph Dixon of Marblehead, Mass., experimented in lead pencil making, but it was not until 1872 that the Joseph Dixon Crucible Company went into the business on a large scale. It has an immense factory at Jersey City, N. J., a graphite mine at Ticonderoga, N. Y., and saw-mills in Florida, preparing cedar lumber. The company turns out more than 30,000,000 pencils every year.

To be quite correct, that which we term a lead pencil is not a lead pencil at all so far as the lead is concerned. In other words, the lead of a pencil is of graphite, or as it was known in olden times, black lead or plumbago.

When the first pencils were made, thin strips of sheet graphite were put into the cedar cases. Later, as the sheet graphite became exhausted, or when it was found that improvement was needed, the inventive faculty of man was called upon and mixtures of powdered graphite and clay were made and formed into the "leads" for the pencils. The shape of the leads was not round as at the present time, but square or rectangular.

A pencil is one of the most simple things in existence. It has only two parts, the lead and the cedar case, and yet how few people exactly understand how the lead gets into the pencil. If you will take a pencil that does not have a rubber tip on it and look at the end opposite the point, you will see that the cedar is in two parts, carefully glued together, and that the lead is exactly half in one piece and half in the other. Now the cedar comes up from Florida in little strips, seven inches long and about one-half the thickness of the pencil. Grooves the exact diameter of the leads are cut into these strips, the leads are placed in the grooves and then the two pieces are glued together and put under heavy hydraulic pressure and allowed to dry. Afterwards they are cut apart and at the same time the same machine shapes them either round or hexagon. Then comes the sand papering, polishing, varnishing and stamping, then they are labeled, tied and boxed and are ready for delivery. In all, a pencil that has a nickel tip and an eraser on it goes through thirty-eight hands before it is finished.

Just a word about the leads. They are composed of clay

and graphite. The clay comes mostly from Austria and Bavaria. The only graphite mine in the country of any size is the one owned by the Joseph Dixon Crucible Company at Ticonderoga, N. Y. Other pencil makers get their graphite from Ceylon and some comes from Mexico. The mixing of the clay with the graphite in mathematical proportions, based on years of experience, is what makes the lead hard or soft, the more clay the harder the pencil and the more graphite the softer the pencil. Both the graphite and the clay are ground on the mills for weeks to render them absolutely smooth and free from grit, and then the mixture is strained through silk sieves which renders it absolutely pure. The mixture of clay and graphite is then passed through heavy rollers, and finally squeezed through a press with a die in the bottom the exact size of the lead. At this stage it is comparatively soft and pliable, and is straightened out and cut into proper lengths. Then leads are packed into crucibles and burned for several hours in order to extract the last degree of moisture and to render them strong and durable. The lead is then ready to be put into the cedar case.

A twin brother to the pencil is the rubber, or eraser. Sometimes this is a separate article, but quite often it is a little plug of rubber fastened into a metal tip. The metal tip is often put on the pencil without the rubber, and it is said that this was adopted to keep people from chewing their pencils.

Besides the common "lead pencils" there are many kinds of colored pencils, blue, green, red and other colors. Colored leads are made of clay with some coloring matter added. For a long time it was very difficult to make colored leads that would not crumble and break, but now this trouble is almost entirely removed by compressing them under heavy hydraulic pressure.

The human hand is a very sensitive instrument, and all advanced educators agree that the quality of the pen or pencil used by the pupil reacts inevitably and vitally upon its handwriting, as well as its skill in drawing. In the very nature of things, the finer the pencil the better the writing, and *vice versa*. And, inasmuch as the pupil uses the pencil oftener, and longer at a time, than a pen, at least as much care and judgment should be exercised in the selection of the former as of the latter. The practise of placing cheap, ungraded pencils in the untrained, sensitive hands of school children not merely produces poor writers, but also destroys the true educational value of the art of writing, and it cannot be too strongly condemned.—G. H. REED in *School Board Journal*.

GRAPHITE reduced to an exceedingly fine degree of pulverization will not remain on the bearing surfaces—it is squeezed out with the oil.

Flake graphite, properly prepared, becomes pinned to the bearing surfaces by the microscopical irregularities which exist on all bearing surfaces, thus forming a veneer-like surface of marvelous smoothness and endurance.

THE best operation of the rawhide pinion is when coated with graphite mixture and a small quantity of lard oil, and the saving in oils and the prevention of the grease and dirt usually found around the metal pinions are very pleasant to the mechanical department operatives who are responsible for the care of the machinery.—*American Wool Reporter*.

ENDURANCE OF SILICA-GRAPHITE PAINT

There is today on the premises of the Joseph Dixon Crucible Company a tin roof of great size, which was put on twenty-two years ago and is still in apparent perfect condition due to the protecting qualities of Dixon's Silica-Graphite Paint.

A prominent painter said to us that he would readily guarantee a tin roof to last ten years if he was permitted to paint it. He has always been a strong advocate of Dixon's Silica-Graphite Paint.

CONCERNING COMPRESSORS—THEIR LUBRICATION

For compressor work the cylinder lubricant must withstand not only great heat or cold but, probably, ammonia influences. This means either a high fire test or a low cold test, or both; and the purely mineral oil fulfils these requirements. If ammonia is used it is imperative that only pure mineral oils be used, since any animal oil in conjunction with ammonia will form soap, which in turn will cause no end of trouble in the machine and condensing coils. Another mineral that is regarded as a good cylinder lubricant is graphite. In a finely divided or flake form it gives an exceedingly smooth skin to the metal rubbing surfaces and at the same time considerably lowers the co-efficient of friction.—*Thresherman's Review*.

Dixon's Flake Graphite has given and is giving very excellent service in the lubrication of compressors. It meets perfectly the high fire and low cold tests. As a matter of fact, flake graphite is practically unaffected by either heat or cold. Neither have acids or alkalis any effect on it.

Our booklet "Air Compressor Lubrication" will be found to contain considerable definite, valuable and interesting information on this subject.

HELPFUL HINTS FOR BUSINESS HELPERS

By FRA ELBERTUS

Written in a sincere and kindly desire to help the young who do not know, and the older ones who sometimes forget.

Charles Lamb said that when he reached his office fifteen minutes late, he always went away half an hour earlier so to make the matter right. This was a joke. The chronic late is always marked on the time book for a layoff when times get "scarce." Your interests are the interest of the house, and theirs are yours—*be on time*.

As to the habit of getting everything packed and ready for a quick scoot when the bell rings, this does not mean for you a raise. Work as if you owned the place—and perhaps you may.

If you want to be absent get permission. If you are unavoidably detained from work, send word why.

Don't throw waste paper and refuse on the floor—baskets are provided for rubbish. Be very careful never to leave oily waste in rubbish baskets or on the floor—put such in metal cans and see that the cover is on. Spontaneous combustion is a common cause of fire.

To repeat an unkind remark is as bad as to invent a lie.

Conversation about things not connected with the business, should not be indulged in on "company time." The house can stand it, but you can't.

Shed no tears over your lack of early advantage, no really great man ever had any advantages that he himself did not create.

Never conceal unfinished work under blotters, in pigeon-holes or drawers, depending on memory to find it. If necessary to leave unfinished work, it should be placed on the desk in sight, under a weight, so if you do not come back in the morning the other man will know just where things are and what to do.

Don't touch pencils, pens, erasers or papers on another man's desk, unless he is there. The Golden Rule applies well here, as elsewhere.

The most precious possession in life is good health. Eat moderately, breathe deeply, exercise out-of-doors, and get eight hours' sleep.

Never use letter paper or envelopes to figure on or for memoranda—it shows you do not realize that the first requisite in business is economy. The same rule applies to burning of lights that are not needed; whether there is a meter or a "flat rate" makes no difference—avoid waste.

GRAPHITE is a good lubricant and almost impossible to wear out, but if used in connection with oil, it should be used sparingly, for a thick paste of graphite and oil refuses to spread evenly over the bearing and will permit one part to get dry and cut, although another part near-by may be kept in a good condition. If used on the roller or ball bearings, nothing is better than a paste of graphite and grease. For making this paste vaseline is frequently used, but its lubricating qualities are not so satisfactory as the regular grease prepared for lubricating purposes; the nature of the vaseline causing it to wear out more easily, while it is not of high fire test and not adapted to stand much heat. Dry graphite alone is hardly safe as a lubricant for plain bearings, because of the difficulty of keeping it in position where needed, but if fed constantly in small quantities it serves well.—*Automobile Dealer and Repairer*.

TO PREVENT RUSTING OF A BOILER

"If you were to shut down a Stirling boiler for the winter, what would you do to prevent wasting or rusting of the boiler?"

—G. O. F.

Answer.—The boiler should be thoroughly cleaned, being brushed with a stiff wire brush, especially the insides of the tubes. If it is then given a coat of graphite and oil, or, better yet, a light coat of Dixon's Graphite Paint, there will be no danger on account of rust or oxidation.

—*Locomotive Firemen and Engineer's Magazine*.

A CERTAIN minister, noted for his piety, recently made his first trip across the Atlantic. When the ship reached mid-ocean, a terrific storm arose, which greatly alarmed the minister.

"You need have no fear," said the captain, "as long as you hear those sailors gambling and swearing there is no danger."

About an hour after his conversation with the captain, and while the storm still raged, the minister, upon looking at the sailors again, raised his arms heavenward and exclaimed:

"Thank God! they're still swearing!"—*Orpheum Joke Book*.

TEN THOUSAND SUBSCRIPTIONS

Mr. W. H. Matheny writes us that it may be of interest to the Dixon Company to know that he has taken over ten thousand subscriptions for *The School Century* with a Dixon pencil which he has faithfully used for that and other work during the past three years.

If the sales of Dixon's pencils should fall off, we shall account for it only on the ground that they are practically everlasting. The increase of sales of the Dixon American Graphite pencils we therefore know must be due to new users; people who are tired of the ordinary lead pencil and who want a pencil with a tough, smooth and enduring lead, than which there is none equal to Dixon's American Graphite. In the matter of grades you can take your choice, as these pencils are made in ten degrees of hardness.

OUR TERRIBLE TONGUE

You take a swim,
You say you've swum;
Your nails you trim,
But they're not trum:
And milk you skim
Is never skum.

When words you speak,
Those words are spoken;
But a nose you tweak
Is never twoken;
Nor can you seek
And say you've soken.

A top you spin,
The top you've spun;
A hare you skin,
Yet 'tis not skun;
Nor can a grin
Be ever grun.

If we forget,
Then we've forgotten;
But if we bet
We haven't botten;
No house we let
Is ever lotten;
What we upset,
Is not upsotten;
Now don't these prove
Our language rotten?—*Boston Transcript.*

DIXON'S FOUNDRY FACINGS

The Dixon Company, being the oldest graphite concern in the world, has considerable advantage in the graphite market. This company is in a position to furnish various kinds of facings for both green and dry sand work. No matter what the conditions are, a Dixon facing can be supplied that will meet the requirements fully.

We shall not attempt to list all the grades of facings here, but we will be glad to give complete information on request.

Productions of the Dixon Crucible Co.

Dixon's Black-lead Crucibles and Retorts, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

Dixon's Brazing Crucibles, made in several shapes for dip-brazing.

Dixon's Graphite Boxes and Covers, for baking carbons and filaments for electric lighting.

Dixon's Fine Office and Drawing Pencils, unequaled for smooth, tough leads and uniformity of grading.

Dixon's Colored Crayons, in wood or solid. For schools, railroads, editors or factory.

Dixon's Lumber Leads, black or colors; for green or dry lumber.

Dixon's Metal Workers' Crayons.

Dixon's Felt Erasive Rubber, for erasing pencil marks, typewriter work or ink.

Dixon's Carburet of Iron Stove Polish, the old reliable; in cake.

Dixon's Pure Flake Lubricating Graphite, a solid lubricant for all frictional surfaces.

Dixon's Special Graphite No. 635, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

Dixon's Electrotyping Graphite, used by the majority of practical electrotypers of this country.

Dixon's Hatter's Lead, for coloring hat bodies.

Dixon's Plumbago for Shot Polishing.

Dixon's Plumbago for Powder Glazing.

Dixon's Plumbago Foundry Facings.

Dixon's Yacht Plumbago, for lubricating and smoothing bottoms of yachts.

Dixon's Graphite Waterproof Grease, for gears, wire ropes, hoisting chains and general machinery.

Dixon's Graphite Axle Grease, for trucks, wagons, carriages.

Dixon's Graphited Wood Grease, for use on trolley car gears which are enclosed in a gear case.

Dixon's Graphited Oil, for use in all places where the use of a gear grease is impracticable.

Dixon's Graphite Cup Greases, for use in cups or open bearings, on spindles, shafting, etc.

Dixon's Oiled Graphite,

Dixon's Lubricating Compound No. 688, for enclosed gears of electric automobiles.

Dixon's Silica-Graphite Paint, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

Dixon's Graphite Pipe-Joint Compound, for steam, gas and water piping, smearing gaskets and flanges.

Dixon's Automobile and Bicycle Lubricants.

Dixon's Graphitoleo, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

Dixon's Commutator Graphite, will glaze commutator with the finish so much desired by electrical engineers.

Dixon's Graphite for Type Setting Machines.

Dixon's Graphite for Talking Machines.

Dixon's Motor Chain Compound, for transmission chains.

Dixon's Crucible Clay and Graphite Mixture, for lining and repairing fire boxes.

Dixon's Stove Cement, for repairing stove or range lining.

Dixon's Traction Belt Dressing, for leather belts.

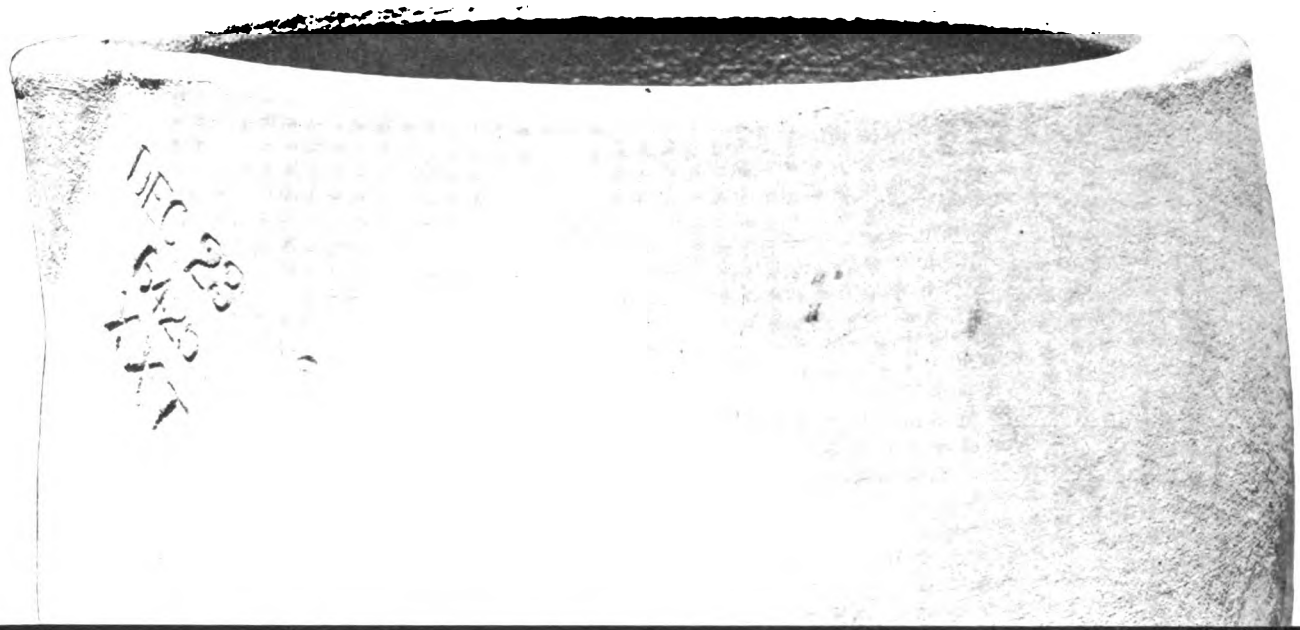
Dixon's Solid Belt Dressing, convenient for those who prefer a solid dressing.

Dixon's Graphite Resistance Rods, from one-eighth to one inch diameter; any resistance required.

Dixon's Graphite Brushes, for motors, dynamos and generators.

Dixon's Graphite Products for Electricians.

Special circulars with detailed information sent on request.



You've got to use crucibles, are you **sure** you are using the best?
Do you **know** you could not increase efficiency in your foundry?

DIXON'S CRUCIBLES

have been standard for over eighty years. Think a moment what your 15 or 25 years of experience means to you—and we've had 80 years of crucible making. Doesn't this justify at least a trial?

Write our Crucible Department.

Joseph Dixon Crucible Company
Jersey City, N. J.



GRAPHITE

VOL. XI.

DECEMBER, 1909.

No. 12.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

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THE WAY SOME PEOPLE DO BUSINESS

The following is an extract from a letter sent in to us to show us how some concerns sell goods. The letter was sent by a firm to one of its salesmen.

"Where you find people using our goods prevail on them to give you an order to ship at once and give them a dating of three or four months on the goods, or six months if necessary, in other words, you can tell them that you will ship the goods now and bill them January 1st, 1910. Of course, do not take all of the orders that way, but in cases where they will not buy any other way. We are giving you this privilege to help you along. Put our goods into all of the mills on any

kind of an argument, any way to get it in there. Give them any kind of a dating they want. It is better to put our goods in this way, as there is no chance of a countermand. If you take an order to be shipped three or four months ahead, someone else will come along in the meantime, get an order and they will countermand the order they have given us.

"With the discount you have on your price list, you can get a man that has been buying fifty pounds to buy one-hundred pounds, in order to get the ten per cent. discount, and you can get the man that formerly bought one-hundred pounds to buy two-hundred pounds or a half barrel, to get the fifteen per cent. discount. If a man wants to buy one-hundred pounds in order to get the ten per cent., and does not need that much at one time, you can bill him fifty pounds now and fifty pounds in six months. By this method he is practically buying fifty pounds now and fifty pounds in six months from that date. The same way with the fifty pound buyer, you can bill him twenty-five now and twenty-five pounds in six months from the date it is shipped."

DIXON'S Textile Crayons are safe to use, they leave no stain after bleaching. Strong and satisfactory.

ONE reason some of us are poor is because we spend too much energy in planning what we would do if we only had the money.—*Ben Franklin Monthly.*

MR. McCANN

By JULIAN STREET

He's Santa Claus' uncle, is Mr. McCann,
The marvelous, modest mechanical man.
He isn't stuck up, just because he's related,
Nor jealous 'cause Santa is more celebrated.
He's always at work, up in Santa Claus' attic
(It's warmer up there, and McCann is rheumatic),
A-singing, and making the deuce of a noise
With pounding, and shouting, and painting the toys
That Santa will take (when it's Christmas again)
To all of the world's little women and men.
He's not out for glory or cash, is McCann,
He's merely a modest mechanical man.

Of all of the labors of Mr. McCann,
The marvelous, modest mechanical man,
The painting of toys is nearest his heart,
—McCann fairly revels and wallows in art.
He uses bright red for the china dolls' lips
And the automobiles and the bottoms of ships,
But he seems to like green for dolls' houses, and beds,
And yellow or blue for the animals' heads.
No wonder he grins in that satisfied way,
With tons of bright paint he can mess in, all day!
If you've favorite colors, it's not a bad plan
To write, before Christmas, to Mr. McCann.

—*Everybody's Magazine.*

GRAPHITE IN BOILERS

One of the jobs I had in my earlier experiences was that of a boiler washer in a plant containing six 250-horse-power water-tube boilers. These boilers were washed out every six weeks. When I closed up a clean boiler, I put two pounds of flake graphite in each drum.

When a boiler was opened up after this treatment, and the turbine cleaner run through the tubes, the scale came off very readily. By examining the side of scale which was next to the tube, graphite could be seen clinging to it. The same condition was found existing in the drums.

Since I received my license and had charge of boilers, I have used this same idea and find it works fine, especially in return-tubular boilers, where the tubes are harder to clean.

—FRANK WULFFEN in *Power and The Engineer.*

THE only engineers who doubt the value of Dixon's Flake Graphite are those who have never used it.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,

Plumbago, Black Lead.

OFFICERS:

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FINDING FAULT

That is the one thing that any of us can do regardless of our abilities in other directions. It requires no especial amount of brain power, discretion or discernment. It does not seem to require very much practise either, it comes more or less naturally to all of us.

The difference between sincere criticism and fault finding, is the difference between right and wrong. Regardless of how good any of us may be, there is no doubt about the fact that we may be better. No matter how conscientious, earnest and sincere we may desire to be, it is human nature to lapse and lag a little unless an occasional spur is provided. Criticism should urge those of us who are right-minded to an inspection of ourselves, and even though we may not believe that the full measure of the criticism is deserved, we will usually find the nucleus of possible improvement in it.

But fault finding is a distinct species and has no legitimate

relation to sincere criticism. Fault finding is that attitude which always picks out the worst side, ignoring the good that may have been done, and overemphasizing the evil. None of us are flawless, none of the work we produce is flawless, but if there is a reasonable balance of good, this fact should be recognized.

The fault finding frame of mind is aptly illustrated by the story of the two Irishmen who were discussing the merits and demerits of a third. The first speaker was pointing out the good traits of the one discussed, but the second speaker could find little or nothing to be praised. Finally the one pointed out that Pat (the gentleman under discussion) was a good shoveler. This the skeptic could not deny, but came back with: "Pat may be a good shoveler, but he is not what you could call a fancy shoveler."

Don't let's be fault finders.

MR. J. H. SCHERMERHORN

At the October meeting of the Board of Directors of the Joseph Dixon Crucible Company, held October 18, Mr. J. H. Schermerhorn, an excellent likeness of whom appears here, was elected Assistant Secretary and Assistant Treasurer.

Mr. Schermerhorn is one of the products of Jersey soil, and began his career with the First National Bank of this city after graduating from the Jersey City High School in the class of 1891. Here he came under the eye of Mr. E. F. C. Young, late President of this company, who was also at that time President of the First National Bank. In 1898, Mr. Young



placed him with the Acker Process Company as Assistant Treasurer, and in 1904 he was elected Secretary and Treasurer of that company. In 1907, a disastrous fire occurred, destroying the entire plant of the Acker Process Company, and Mr. Schermerhorn again returned to Jersey City, entering the employ of the Joseph Dixon Crucible Company. Mr. Schermerhorn has done excellent work since his connection with the Dixon Company in the systematizing of office and factory routine.

As will be seen from his photograph, Mr. Schermerhorn is still a very young man, and there is every likelihood that more will be heard from him.

DIXON's graphite publications sent free upon request.

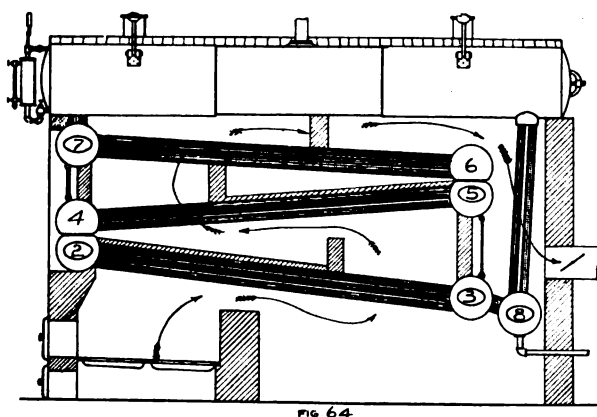
PREVENTING CORROSION OF STEAM MACHINERY

By W. H. WAKEMAN

Chapter XIX

Fig. 64 is a boiler that is fitted with two steam drums which extend the whole length of the structure, although only one can be shown in an illustration of this kind. The lower part consists of four banks of tubes, one of which is vertical while the others are nearly horizontal, but are so inclined that as water circulates through them its course is upward. When under working conditions, the operation of this boiler is as follows: Water directly over the furnace in the lower bank of tubes naturally rises and flows into the lower front twin cross drum 2 and is replaced by water coming up from the lower rear cross drum 3. From 2 the water goes to 4, then rapidly to 5, 6, and 7, after which it is discharged into the lower part of the steam drum. It then moves backward into the vertical tubes and thence all that has not been converted into steam finds its way to the mud drum 8. This explanation shows that while the water is circulating through the three banks of tubes, it is moving in a direction opposite to the course followed by the hot gases on their way to the stack, as indicated by the arrows. This is a good point, as it enables heat to pass into the water very rapidly.

The two long steam drums, or shells, provide large storage capacity for steam, but the water line is intended to be carried below the centers while the masonry is not brought into contact with these drums until it reaches a point above the center



of them. This shows that a space is left on both sides of each drum that is exposed to the products of combustion on one side, and is only covered by steam on the other, or in other words, it is not protected by water. It is claimed that this feature acts as a superheater, hence the steam is more valuable than it would be if not subjected to this drying process. Superheated steam is more expansive than wet steam, but it is a good idea to be cautious about the plan adopted for securing it, as it may cost more than it is worth.

Suppose that a fireman allows his water level to fall six inches below the point at which his boiler is protected by masonry from being burned. What is the result? What is the difference between that and closing in the masonry six inches above the regular water line? If the tubes have taken enough heat out of the products of combustion to render them harmless to the iron of the shell or drum, then it is safe,

but is there not a chance for forcing a boiler hard enough in an emergency to increase this heat until it becomes dangerous? Is it not safer and better to close the brick walls in until they protect the shell at a point below the water line? This is a point to be decided by the engineer in charge, while setting the boilers, regardless of the type used, hence the matter is presented here for due consideration. The boilers in a certain plant I took charge of several years ago, were set to allow the shells to be exposed above the water line. The first time that masons were making repairs on those settings, I had the side walls brought in until the shells were protected below the water line.

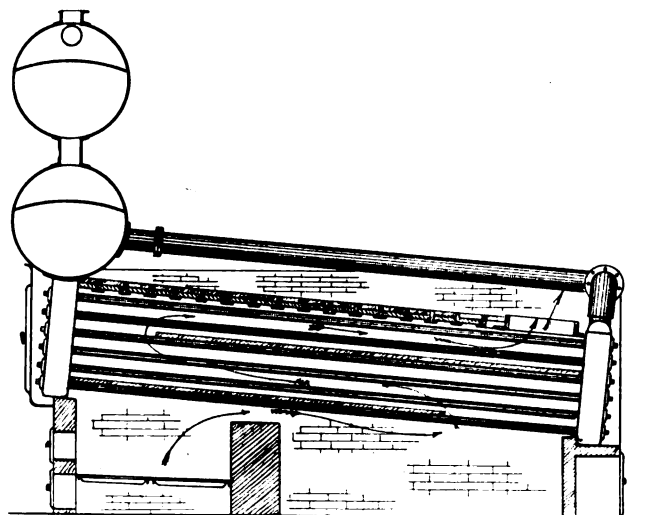


Fig. 65 represents a boiler in which all steam is made in the tubes, as the products of combustion are not allowed to come in contact with the steam drum at any point. Baffle plates made of fire brick force the hot gases to travel three times the length of this boiler before they go into the stack. A perforated plate is provided in the steam drum, which prevents water from going over with the steam. Some of these boilers are built with one drum, while others have two of them.

A large variety of boilers has been presented in these chapters, which require brick settings. Common red brick are suitable for all parts that are not exposed directly to intense heat, but for furnace lining, the top of bridge-walls, masonry above arch plates, and all other places that are in contact with the products of combustion when in service, Dixon's Refractory Graphite Bricks ought to be used, as they will outlast other articles made for this purpose, and thus prove to be a paying investment.

(To be Continued.)

OIL THAT COLD WILL NOT AFFECT

It is often difficult to keep machinery properly oiled in cold weather, as the oil freezes in the oil holes and the cups, and the oil upon the ways of the lathe and planer becomes stiff, causing the machines to work hard. A good oil for winter use is made by mixing graphite with cylinder oil until in a thick or pasty consistency, and then adding kerosene until it flows freely. This oil will not become stiff at fourteen degrees below zero, and is valuable to those operating machinery outside or in cold shops.—*Penberthy Engineer and Fireman.*



PALACE OF STEEL AND FIREPROOF MATERIAL

Steel Manufacturer Gives North Side Its Handsomest Residence

The finishing touches are being put on the new residence of B. F. Jones, Jr., the active head of the Jones & Laughlin Steel Company, at Ridge and Irwin Avenues, and the family expects to occupy it Thanksgiving day. Being a firm believer in steel constructed buildings, Mr. Jones has had a home erected of that type, close to the homestead of his illustrious father. The residence is probably the finest ever erected on the North Side, occupying a lot fronting fifty feet in Irwin Avenue and extending along Ridge Avenue for about two-hundred feet.

The house contains thirty rooms and is absolutely fire-proof, being constructed of terra cotta hollow tile, the material used to fireproof the city's largest skyscrapers. In fact, should the woodwork take fire in any one room, it would be possible to confine the blaze to that room. The house is built of red brick, with brown terra cotta trimmings. The walls and ceilings and floors are constructed of terra cotta hollow tile, while the framework is steel.

The roof is steel trussed, resting on terra cotta hollow tile building blocks. The rooms on the first floor are exceedingly large, containing the library, two large living rooms, dining room, pantry, kitchen and several smaller ones. The other rooms are on the second and third floors, a few being in that portion of the residence, which is four stories in height.

The interior is finished in hardwood throughout, mission oak predominating. The ceilings are of stucco and cement.

Mr. Jones' new home is larger than his summer residence in Sewickley Heights, and will be used as the family's home during the winter months. Rutan & Russell, the architects, have carried out all details in subdued style, in accordance with the owner's wishes. The floors are hardwood, the stairways of steel.—*Pittsburg Gazette Times*.

Since the very best of materials were selected for this structure, it was quite consistent that the specifications called for Dixon's Silica-Graphite Paint. This was used on the superstructure of the building. A. & S. Wilson Company of Pittsburg, Pa., were the contractors.

NORWALK, CONN., July 17th, 1909.

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

GENTLEMEN:—

Will you please give me a price on American Graphite Axle Grease. I have used it and I have tried about all kinds. I am an agent and go into five towns with a team every week. Could handle it as a side line. I think it a seller if pushed.

Respectfully yours,

JAS. E. LARMER,
56 Wilton Avenue, Norwalk, Conn.

"Father, what are wrinkles?"

"Fretwork, my son, fretwork," replied *pater familias*, confidently.

FLAKE GRAPHITE IN A CLASS BY ITSELF

Graphite and Oil Not Competitors Where Flake Graphite Comes In

By JOHN MOTION

The use of flake graphite as a lubricant in the cylinders of gas and gasoline engines has greatly increased during recent years.

Two good reasons account for this fact.

The first and chief reason is the one advocated many times in the columns of this little magazine, viz.:—the peculiar property flake graphite has for smoothing over the microscopical irregularities with a veneer-like coating, causing the moving parts to slide over each other more easily. Regarding this important point, mention only is made of it here; this part of the subject has been so thoroughly discussed by others that no more need be said. It is sufficient to say in this respect that flake graphite stands in a class by itself.

The other reason concerns what may be called the weakness, from a lubricating point of view, of many of the oils used for gas and gasoline engine work. The fact that perfection in the manufacture of lubricating oils for this purpose has not yet been reached, gives graphite a more important position than most people are aware of.

Graphite and oil are not competitors, they are rather collaborators, each can get along without the other, but much better results are obtained when they are used together, and for this reason graphite is incorporated with oils and greases in the manufacture of graphite lubricants.

Graphite has been of great assistance in the lubrication of steam cylinders, even where a high grade oil has been used, so that better results would rightly be expected in gas engine work, where in most cases the lubricating oil is lacking in some of the best properties which are found in steam cylinder lubricating oils.

A very high degree of perfection has been arrived at in the manufacture of cylinder oils for steam engine lubrication by many oil refiners, but the same assertion cannot be made regarding the cylinder oils for gas engines. The difference in the nature and quality of the crude oils from which these products are obtained, is no doubt the principal reason.

One of the most essential qualities looked for in a gas engine or automobile cylinder oil, is the cold test; *i. e.*, the ability of the oil to remain liquid and be able to flow during the winter months when the temperature is very low. To obtain this result, refiners make use of the crude oils from Texas and California, as they contain little or no paraffin wax. These oils have an asphaltic base, which means that when the lighter products are driven off by heat an asphaltic residue remains behind. This difficulty is sometimes obviated by taking from the crude oil a portion, or distillate, which is just light enough to be vaporised in the cylinder of the engine, and then pass out with the exhaust gases, leaving no deposit. It is readily seen on account of the ease with which the oil may be entirely vaporised, that unless a continuous stream of oil is kept dropping inside the cylinder, there will be at times nothing there to relieve the friction, and something is needed to help.

This is where graphite comes in; it does not pass out through the exhaust pipe, but stays on the sides of the cylinder and the piston moves back and forth as smoothly as ever.

Suppose a heavier oil is used so that it won't all pass out through the exhaust pipe. What happens then? After the

engine has been running for some time, the lighter portions of the oil have been driven off and the asphaltic residue remains behind in the cylinder, forming a tarry like mass which after some time chars, then gets red hot, and pre-ignition occurs, with the destruction of the lubricating qualities of that part of the oil.

"Of two evils choose the lesser." In this case use the lighter oil, so that no deposit of a tarry nature will remain in the cylinder to cause trouble, but depend on the graphite to lubricate when the oil fails.

THE LOVE OF A BUTCHER BOY

Deer heart, I'm in an awful stew
How I'll re-veal my love for you.
I'm such a mutton-head, I fear—
I feel so sheep-ish when you're near.
I know it's only cow-ardice
That makes these lamb-entations rise.
I dread a cut—let me explain:
A single roast would give me pain.
I should not like to get the hooks,
And dare not steak my hopes on looks.
I never sausage eyes as thine.
If you would but-cher hand in mine—
And live-r round me every day,
We'd seek some ham-let far away;
We'd meat Life's frowns with Love's caress,
And cleav-er road to happiness.

WHY HE WANTED A PREACHER

"Is there a preacher on this train?" asked a large, dark-visaged man as he passed from one sleeper to another.

At last, after he had loudly repeated his query for the fifth or sixth time, a grave-looking gentleman laid aside a book and rose up from a seat near one end of the car.

"I have the privilege of being a minister of the Gospel, sir," he said. "Can I be of any service to you?"

"Yes," said the large passenger. "A fellow back in the dining car has bet me \$5 that it wasn't Lot's wife who got Joseph into trouble, and I thought you might have a Bible with you, so I could prove he was wrong and get the money."

—*Chicago Record-Herald.*

NEW DEFINITION

The *Raleigh News and Observer* asks: "What is a Colonel?"

Once, when some one asked an old Georgia ducky that question, he replied:

"Well, Suh, dar's lots er ways ter answer dat. I has knowed folks what wuz born kunnels—de thing runnin' in de blood fer ginerations an' ginerations; then ag'in, I has knowed folks what waz desapp'inted ter be kunnels, an' others what wuz made kunnels by bein' kind ter de culud folks. For instance, any man what gives me a dollar, or even a quarter, I never fails ter call 'kunnel' f'um dat time on!"

—*Atlanta Constitution.*

A GOOD pencil gives the user a sort of subtle satisfaction—use Dixon's Pencils and get the sensation.

AN ENGINEER'S TEST OF DIXON'S AIR BRAKE GREASE

SHERIDAN, WYO.

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

GENTLEMEN:—

In reply to your letter of July 7th, will say that I have been unable to give your Graphite Air Brake and Triple Valve Grease the test I intended, namely on engine tender triple valves, as we have had and do still have trouble with the usual train pipe moisture washing the lubricator out. I had charge of and did the cleaning of tender brakes and sent to you for this grease intending to use it, but the "panic" caused a reduction of force and tender brakes were relieved of the cleaning, hence could not use the grease as intended. Have, however, used it on the engineer's valve used in the triple testing plant, and on the various stop cocks connected with it. Greased the brake valve last winter, and it works as good now as it did when first greased, both the rotary and the equalizing piston. Also made a test as follows:

Took a triple valve having a slightly worn piston bushing and fitted a ring in the piston that could barely be forced into the bushing. Then greased the triple piston bushing with your grease and proceeded to grind the ring in the usual way.

After running the ring grinder at the rate of about 250 strokes per minute for a half hour, I examined the triple piston bushing and the packing ring. Neither showed any great amount of wear, practically none to speak of, and the ring fit was as tight as before. When using a light mineral oil instead of your grease, the bushing would have been straightened up and the ring ground in sufficiently to respond at a twelve pound per minute train pipe reduction. This being considered as an O. K. ring.

Therefore I think your grease would eliminate many worn bushings in triples. Have been unable to tell as yet if your grease will stand moisture, but will try to make a test in the future and will be pleased to let you know the results.

Yours very truly,

A SCALE FOR TIPPING

THE daily papers inform us that the Berlin Waiters' Association is considering a proposal to fix a scale for tipping. All orders under seventy-five cents are to be tipped at the rate of twelve per cent, orders for more than seventy-five cents at the rate of ten per cent.

An old-time head waiter of the Astor House, New York, once said that a ten per cent tip, if generally given, would be entirely satisfactory to waiters everywhere.

Certainly there would be less objection to the practise of tipping if better service were rendered by the waiters. Many men patronize some of the popular lunch rooms simply because of the oppressive lengths to which the tipping system is now carried.

MIND READING

Charlie Loveday: "Um-ah-er-er-er! He! He!—

Jeweler (to his assistant): "Bring that tray of engagement rings here, Henry."—*Tit-Bits.*

You've got to
use some lubri-
cant. Then
isn't a little in-
vestigation on
the subject
worth while?

Do you know that
Dixon's Flake
Graphite absolutely
prevents abrasion?

Intense heat has
no effect upon it,
neither has intense
cold.

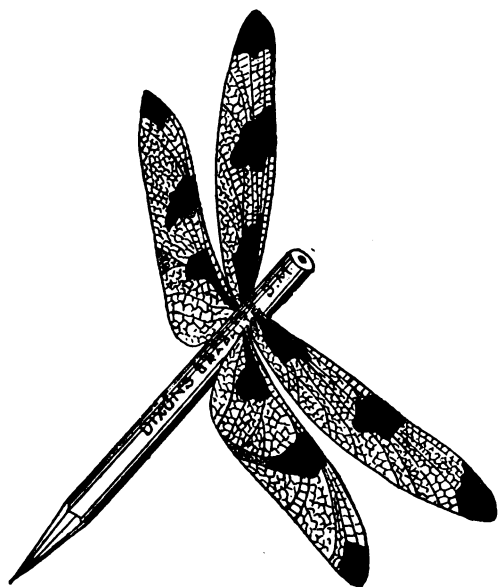
Acids or alkalies do
not alter Dixon's Flake
Graphite in any way.

Oil or grease alone
cannot stand any such
tests as Dixon's Flake
Graphite easily meets.

That's why engineers
and machinists use
Dixon's Flake Graphite
in their work—it does
what no other lubricant
can do.

Write for Free Sample 190-C.

Joseph Dixon Crucible Co.
Jersey City, N. J.



THE business air now being cloudless and no adverse winds, we send up a Dixon Pencil to attract the attention of those who are interested in air navigation and as an encouragement to aviators who need not come to earth for their favorite pencil when they need one.

We have not really invented a flying pencil, but we stand ready to supply pencils to balloonists the same as the ordinary people who have to remain on the earth.

This cut should have been made bearing an Olive Branch, for a pencil certainly brings peace to the households of mankind.

We hope our readers will not infer from this flyer that our pencils are high, for they can be purchased from dealers at any old price to suit requirements, and the airy illustration is only to catch the eye as a reminder of the stationery stores waiting to serve you.

DIXON'S GRAPHITE BRUSHES ARE SATISFACTORY

The following communication which came to us sometime ago, emphasizes some of the things that we have said regarding the Dixon Graphite Brushes.

CLEVELAND, O., Sept. 3, 1909.

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

GENTLEMEN:—

Please send us the following sized Graphite Brushes:

$\frac{1}{2}$ " x $1\frac{7}{8}$ " x $1\frac{7}{8}$ "—2 doz.
 $\frac{1}{2}$ " x $2\frac{3}{4}$ " x $1\frac{7}{8}$ "—1 "
 $\frac{1}{4}$ " x $\frac{7}{8}$ " x $1\frac{7}{8}$ "—1 "

The samples you sent us sometime ago were very satisfactory.

Yours very truly,

THE S. A. GILMAN PRINTING CO.
(Signed) F. C. MERRICK, Treas.

IN DOUBT

"Did you ever have appendicitis?" said the insurance man.

"Well," answered the skeptic, "I was operated on, but I never felt sure whether it was a case of appendicitis or a case of professional curiosity."—*Washington Star*.

DIXON'S AIR BRAKE AND TRIPLE VALVE GREASE

In talking with a prominent general air brake inspector in New England recently, a Dixon representative was impressed with the excellent results obtained through the use of Dixon's Air Brake and Triple Valve Grease on one of the large roads.

In speaking of this product, the railway official said: "Dixon's Air Brake and Triple Valve Grease is very satisfactory for all air pump work, such as replacing air valve seats and cap nuts and air cylinders, graphite grease being used on threads. Where oil is used for such purposes the oil burns out and corrosion sets in, causing the nuts to rust. Under these conditions it is quite often necessary to break the casting in order to remove the seats."

The New York, New Haven and Hartford Railroad is one of the important roads on which Dixon's Air Brake and Triple Valve Grease is giving excellent results. Before its adoption as a lubricant for all air brake parts on locomotives, very careful tests covering many months were made. The close inspection which followed these tests showed that the results were highly satisfactory, not only from an operative standpoint, but the economical advantages derived, thus reducing the cost of maintenance.

An interesting fact which won much approbation, was that the air brake cylinder packing leathers were fully protected by the grease from freezing in extreme cold weather. This gratifying result was secured on account of Dixon's Air Brake and Triple Valve Grease not being affected by a low temperature.

During the past year the New Haven Road has been making a test of Dixon's Air Brake and Triple Valve Grease on the triple valves and brake cylinders on their heaviest passenger car equipment, including some of the famous limited trains which have secured a well merited reputation for most excellent service between New York and Boston.

To illustrate the great care used in following up this work, it is interesting to note that a special test of this equipment was made every other day. Twice during the year this equipment was taken down and thoroughly inspected, and it was somewhat surprising to see the fine condition this equipment was in. This almost perfect condition of the equipment was attributed to the fact that the grease remained at the point of application, and was not moved from its place of service by the strong current of air.

October 18th, 1909.

Joseph Dixon Crucible Company.

DEAR SIR:—

I find your Silica-Graphite Paint does all you claim; I have been using it for a number of years now on my buildings and have yet to find a case where it has not given thorough satisfaction.
Very truly yours,

DIXON'S Pipe-Joint Compound for all threaded and flanged connections. Because of its lubricating nature, it assists in making tight screw joints, but since it does not set, it permits of easy disconnection whenever this is necessary. Get a free sample and try it on a few joints.

A NEW DEPARTMENT FOR WOMEN?

At the annual convention of Oil Mill Superintendents at New Orleans, a manufacturing company was represented by a young woman who read a paper that elicited very favorable comment and the firm she represented was congratulated in having such an interesting and able representative. The young lady's amiable manner and adaptability to her surroundings won her many new friends, and we believe it will prove a good advertisement for the company.

GRAPHITED

If money talks
As some folks tell,
To most of us
It says "Farewell!"

—*Lippincott's Magazine.*

A girl likes an extravagant man—unless she is thinking of marrying him.

Those who stand on their dignity should be careful that their feet don't slip.

The ocean diver may be prosperous, although his business is going under.

When does the human tongue resemble a town in China? When it's Pekin (speaking).

He: "I've the greatest horror of premature burial, being buried too soon, you know." She: "Oh, that is impossible."

Be not too confident in thine own opinion, but be willing to hear the judgment of others.—THOMAS A KEMPIS.

Mr. X: "So they got married and started off in a motor car." Miss Y: "And where did they spend their honeymoon?" Mr. X: "In an hospital."

To get a great number of rings from men is not necessarily a sign of flightiness in a girl. She may be a telephone operator.—*Cleveland Plain Dealer.*

Marriage.—An insane idea to provide a woman with a house, and give her three parts of the money you have toiled for all the week.—BURTON BALDRY.

Citizen: "I thought you owned your house." Subbubs: "So did I, but I had an argument with our cook last night, and I'm better informed this morning."

The secret of managing a man is to let him have his way in little things. He will change his plan of life when he won't change his bootmaker!—MRS. CRAIGIE.

Mr. O'Corrigan (as Patsy trots out his new bike): "Now mind me words, my son. In running a cow the great thing is to keep the animal in front of you all the time."

Husband: "If a man steals—no matter what it is—he will live to regret it." Wife: "During our courtship you used to steal kisses from me." Husband: "Well, you heard what I said."

Blank was accosted by a fellow-citizen the other night, who said: "I heard your wife lecture. Her power of diction is wonderful." "Yes, fair. But it's nothing to her power of contradiction."

"It is claimed by complainant that you assaulted him," said the judge. "He lies, your honor. I never touched him.

Croucher and Willoughby picked him up and carried him to the pump. All I did was to work the pump-handle."

Master: "If your friend were to borrow 12s. from you, agreeing to pay one shilling a month, how much would he owe you at the end of the year?" Pupil: "Twelve shillings." "You don't know the elements of arithmetic!" "But I know my friend."

Schoolmaster: "Jones, in the sentence, 'I have a book,' what is the case of the pronoun 'I'?" Sammy (promptly): "Nominative case." Schoolmaster: "Next boy, tell me in what case to put the noun 'book.'" Next Boy (thoughtfully): "Bookcase."

"What are you grumbling about?" inquired the pedestrian. "Why," snapped the disgusted motorist, "this machine broke down, and I can't get it to go." "Oh! you're in luck; the last feller like you I seen 'round here got all broke up 'cause he couldn't get his to stop."

"Thumper occasionally says things that are wonderfully apropos," said one statesman. "Yes," answered the other; "he's like our parrot at home. It doesn't know much, but what it does know it keeps repeating until some circumstance arrives that makes the remark seem marvellously apt."

A school inspector put some questions to the lower form boys on the common objects of the schoolroom. "What is the use of that map?" he asked, pointing to one stretched across the corner of the room. "Please, sir, it's to hide the master's bicycle!" came in chorus from a dozen shrill voices.

In New York, when you see a man wearing a photograph button in his coat lapel, you may be pretty sure that he is either engaged or married to the lady whose portrait adorns him. Instead of wearing an engagement ring it has become the fashion among certain classes of men to wear love buttons.

"Mother, I can never win the medal for good behavior," exclaimed a boy just in from school; "I've tried and tried, but some other boy always gets it." "But you must keep on trying," said the mother, encouragingly. "It's no use," replied the boy; "I shan't try any more. It's a clean waste of goodness."

A newly-elected French mayor, who had been for sometime a magistrate, was conducting the first marriage ceremony since his appointment to his new office, and in winding up the service he thus absent-mindedly addressed the bride and bridegroom: "You are now united in marriage by law. You have three days' grace in which you may appeal against the sentence!"

WHY MEN WEAR TROUSERS

The *Providence Journal* tells us that man was forced into trousers by woman. In his earliest days he is swathed in a queer bundle of incoherent bandages by a woman. Later woman puts him in cute little dresses so that the neighbors can't tell him from his little sister. Later woman cuts off his curls and puts him into knickerbockers, and woman puts him into "long pants" when she gives the word and not before. That is all that man has to do or ever had to do with wearing trousers. Woman forced him into them in the first place and now he is afraid of wearing anything else for fear of making a sensation. In fact, if he should attempt to put on dresses he would be arrested by officers of the law.

DIXON'S PENCILS FOR SPECIAL PURPOSES

We have a very pleasant letter from a principal of a Southern High School. It points out the advantages of the use of Dixon's Pencils due to the fact that we specialize in their manufacture. In this way the particular pencil for the special need can easily be supplied. We quote from the letter:

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

GENTLEMEN:—

For sometime past, I have been using more than half a dozen different kinds of Joseph Dixon Pencils in the department of mechanical drawing in this school. The tests to which pencils are put in mechanical drawing, are by no means mild ones. Various sizes and qualities of leads are necessary. I have used many kinds and makes of pencils in my work, but I have never found any other house that furnished me a special kind of pencil for each specific kind of work. There is no class of work in mechanical drawing for which I cannot find a Dixon Pencil that precisely "fills the bill."

Yours cordially,

COMPOSITION OF TINFOIL

Tinfoil, which is extensively used for wrapping tobacco, certain food products, and other articles of commerce, is a combination of lead with a thin coating of tin on each side. According to the *Valve World*, it is made in the following manner: First, a tin pipe is made of a thickness proportionate to its diameter; proportion not given. This pipe is then filled with molten lead and rolled or beaten to the extreme thinness required. In this process the tin coating spreads simultaneously with the spreading of the lead core, and continuously maintains a thin, even coating of tin on each side of the centre sheet of lead, even though it may be reduced to a thickness of 0.001 inch or less.—*American Inventor*.

ELOPING UP-TO-DATE

The coatless man puts a careless arm
'Round the waist of the hatless girl,
While over the dustless, mudless roads
In a horseless wagon they whirl.
Like a leadless bullet from hammerless gun,
By smokeless powder driven,
They fly to taste the speechless joys
By endless union given.

The only luncheon his coinless purse
Affords to them the means
Is a tasteless meal of boneless cod,
With a dish of stringless beans.
He smokes his old tobaccoless pipe,
And laughs a mirthless laugh
When papa tries to coax her back
By wireless telegraph.—*Motor Record*.

TEST samples of Dixon's Automobile Lubricants have been asked for by prominent manufacturers with a view of having better lubrication on the 1910 cars.

TEMPERATURES OF THE UPPER AIR

At the recent Congress of German Scientists at Dresden, Saxony, Professor Hergesell told of his experiments with and records obtained by automatic apparatus sent up to great heights in unmanned balloons. The balloons were sent up in the month of July in different latitudes, and the results were quite surprising and in some respects quite the reverse of what might have been expected. It seemed to be demonstrated that at high altitudes the atmosphere is the coldest over the equator and the warmest over the poles. Balloons which went up to a height of eleven to twelve and one-half miles in the tropics, were found to have registered about 148 degrees below zero, Fahrenheit, while in the latitude of central Europe the temperature was only —76 to —85 degrees at the heights indicated. The temperatures do not continually fall with the ascent, the greatest cold being reached at heights of from six to six and three-quarter miles, varying somewhat in different parts of the world. Professor Hergesell concludes that the atmospheric conditions which affect our weather do not extend higher than seven miles.—*Compressed Air*.

AN EPITAPH

The following epitaph, though not from his pen, was used by Mr. Samuel L. Clemens on the tombstone of his daughter. It is an exquisite little piece. It seems to represent manly grief, deep, thoroughly true, and yet controlled.

"Warm summer sun,
Shine kindly here,
Warm southern wind,
Blow softly here.
Green sod above,
Lie light, lie light,
Good night, dear heart,
Good night, good night."

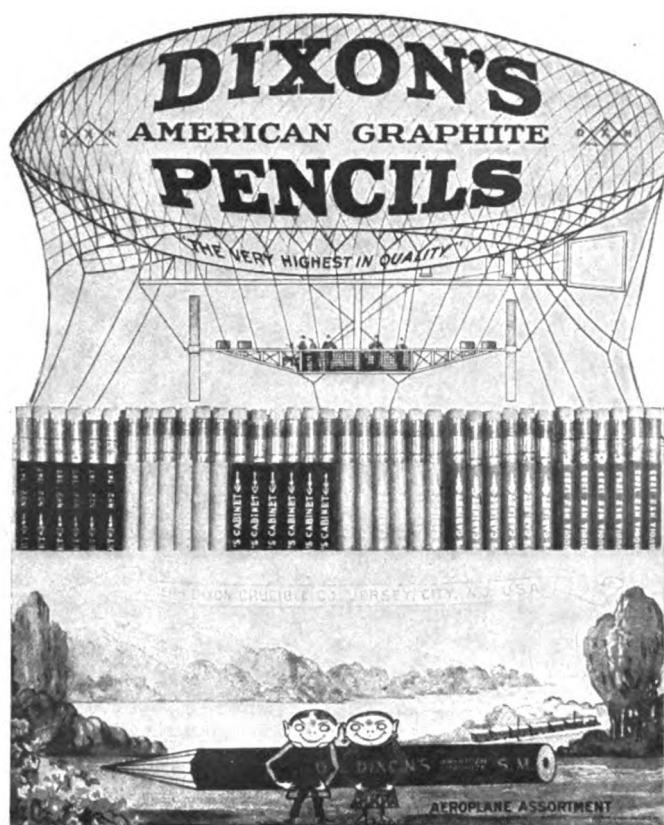
DIXON'S AXLE GREASE FOR FIRE ENGINES

The manager of our Buffalo office recently called upon the Rochester Fire Department and learned from Captain M. F. Free that Dixon's Graphite Axle Grease has been in use for years in this city. It is used on wheel caps and the captain stated that from fifteen to twenty runs are made with one application of the grease.

This will not only be of interest to other fire departments, but to all owners of horse-drawn vehicles, since the severity of a test in fire department service insures a quality of axle grease fully capable of meeting all commercial conditions.

THE question of grease versus oil in street car lubrication is a very interesting one, and there is a strong tendency toward the use of greases. When a suitable grease is chosen and a proper amount of Dixon's Flake Graphite is added, marked improvement in lubrication is at once noted.

BEFORE assembling the parts of a dismounted engine, rub flake graphite thoroughly into the surfaces of the pistons and cylinders. This will result in smooth running, good compression, and improved lubrication. The effect will endure for sometime.



DIXON'S AEROPLANE ASSORTMENT No. 468

This cut represents the Dixon new assortment or counter selling box, which the company have put on the market, to meet a popular demand for an up-to-date and attractive combination.

The interest now manifested in aerial navigation gives a peculiar interest to this assortment and orders already being filled prove its merits.

The colors of the box are bright, and the pencils finished in contrasting shades.

Lithographs in color and particulars will be gladly furnished dealers on request.

"SORRY—NOT IMPORTED"

Not long ago, there was quite a little competition among the bottlers of spring water for royal preferment. There seemed to be considerable confusion over the situation, and sometimes the same crowned head would be claimed by two competitors.

While all this excitement was going on, the White Rock people thought it a good time to emphasize the value of American trade and American products. At the end of their advertisement, they ran the clever little phrase, "Sorry—Not Imported."

The word "imported" seems to possess a peculiar value impossible of possession by the American product. Of course, it is not reasonable to believe that everything called American is the best, but it is just as reasonable as to suppose that everything bearing a foreign label ranks highest.

Generally speaking, the quality of the product depends upon the quality of the man producing it. We believe it may be safely stated that the American workmen as a whole, are the most intelligent in the world. In a comparatively short time,

America has built up such industry as to place her in the very foreground of great nations. Prosperity depends chiefly on the condition of the masses who must necessarily be workers. The idea is this: given a great nation, you can deduce a great industrial system. We do not rank high in commerce, our industrial strength must be based on production.

We believe there will be a few who would try to dispute the general proposition, but the concrete instance that we wish to point out refers to Dixon's American Graphite Pencils. These pencils are made right here in America. They are chiefly the product of American brains and skill. We see no reason, however, why this should lower their rank. Certainly it is no shame for a man or woman to be born in America. It does not indicate any inferiority. Then why is it that the product made in America does not even seem to secure from America the same respect which a foreign product exacts?

We frankly acknowledge that we don't know of any other consistent method of making our pencils better. We also acknowledge that we don't know of any pencils made anywhere that are superior. To those who want a pencil with which to do their work and do it well, we can conscientiously say that Dixon's is as good as the best. To those who want some foreign label attached and desire the label more than the pencil, we can merely say: "Sorry—Not Imported."

SPEAKING OF CRUCIBLE RECORDS

September 30th, 1909.

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

GENTLEMEN:—

We are not just now in the market for crucibles, but when in need of anything in that line, we will surely order from your house, as we are having such excellent results in the use of your goods, especially the No. 60 crucibles. We notice in some other advertisements the number of heats made in one crucible, but we can easily out-count them with some we have received from you.

Yours truly,

The above letter pleases us, for the reason that it shows an accurate account is kept of the running of crucibles, and under such conditions Dixon's are found the most economical.



THE HORSE

The following letter was received from Mr. A. C. Woodman, Treasurer Union Petroleum Company, Philadelphia, Pa., which we have much pleasure in reproducing. Our booklet, "The Horse," has been pleasantly received by those interested in horses and if any of our readers have not as yet received a copy of "The Horse," we would be pleased to send them a copy of the same.

PHILADELPHIA, U. S. A., July 23rd, 1909.

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

GENTLEMEN:—

We have received your booklet, "The Horse," and considering it a valuable publication, we would like to put a copy of it into the hands of each of our drivers, and if you can send us fifteen copies, we shall be very glad to pay you whatever they are worth. We are very proud of our horses, and have endeavored to give them the treatment which a good horse deserves; in fact, we believe there are none better cared for in this city, but the average driver requires a good deal of educating, and as your book is written in a language that any of them can understand, we know it will be of considerable benefit.

Trusting we are not asking too much, we are,

Yours very truly,

UNION PETROLEUM COMPANY.

(Signed) A. C. WOODMAN, Treas.

SOMETHING DIFFERENT

By NIXON WATERMAN

She had greatly worried the clerk who'd shown of tablecloths
a score,

But she could not find a cloth she'd have in all that mammoth
store;

Till the clerk remarked: "Here's something new—on that my
word I'll pledge,

With the center right in the middle, see? and the border round
the edge!"

And the would-be purchaser exclaimed: "Well, that is some-
thing nice!"

And straightway bought a pair nor paused to ask the clerk the
price.

—*Advertising and Selling.*

THE clutch shifter trunnion should always be well lubricated, especially where considerable gear changing is necessary. Flake graphite mixed with oil or a graphite grease can be used to great advantage.

Universal joints in driving shaft are effectually lubricated when packed with graphite cup grease. Valves and walking beams should be lubricated every day and for these a graphite grease or flake graphite and cylinder oil is recommended.

A "bug gun" loaded with finely powdered flake graphite is a wonderfully useful instrument to have, as a small quantity of lubricating graphite may easily be blown into many out of the way places that need just that kind of lubrication.

The dry flake graphite becomes pinned to the bearing surfaces by the microscopical irregularities, forming a tough, veneer-like coating of graphite of wonderful smoothness and endurance.

CENTER PLATE LUBRICATION

The rapid wear of wheel flanges under heavy cars and of the flanges of rails on curved tracks, has caused considerable attention to be directed toward the discovery of effective remedies for the trouble. The causes of the excessive wear are well known, but cannot be entirely avoided because of certain fundamental principles necessarily encountered in the design of four wheel trucks. That the evil may be very largely overcome, however, has been amply proven.

It is known that the stiff working of crude center plates is responsible for a great part of the wear, and various means have been adopted for lessening the friction of the bearings. The issue of the *Railroad Age Gazette* of July 23, 1909, states a most effective and inexpensive remedy used by a large western line which makes a practise of using flake graphite in lubricating center plates. "Whenever a car is raised from the trucks, about two ounces of graphite is spread over the truck center plate. A small measure, two inches in diameter and two inches high, is used for this purpose. This dry lubricant is pressed into the metal plate, filling up irregular spaces and after a little wear, creating a smooth surface which moves with less friction than the rough dry plate, or a plate lubricated with ordinary grease. The cars which are so treated are stenciled, and the practise of lubricating center plates is regularly followed up." This method illustrates a very simple way in which flange wear may be materially reduced.

To meet the demand for a center plate lubricant that could be easily applied and would be lasting in its quality, the Dixon Graphite Center Plate Grease was designed. Needless to say, it has proved to be up to the usual Dixon standard, and excellent results are being obtained by its use. It is a heavy bodied grease in which is incorporated a large proportion of flake graphite, so that long after the grease itself has disappeared from the bearing surfaces, effective lubrication is afforded by the graphite which has become attached to the metal. This grease is now used by several trunk lines and is giving the best of satisfaction as an efficient center plate lubricant.

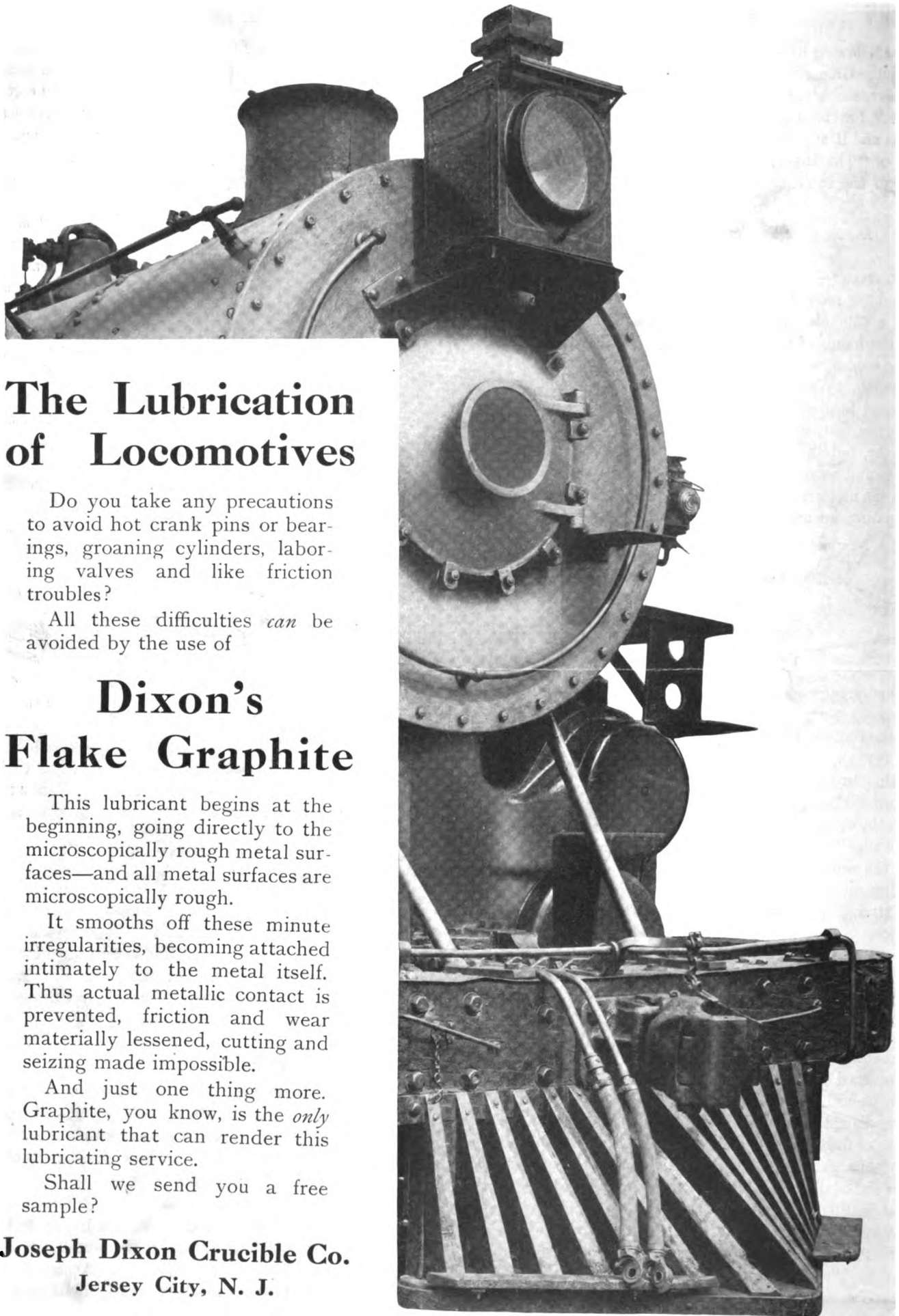
HINT ON PIPE FITTING

"In screwing pipe fittings together spread a thick mixture of graphite and oil on the threads. This will help make the joints steam or water tight. White lead is used when the pipe is not to be taken apart again. It hardens, while the graphite does not, and makes it almost impossible to unscrew the pipe fittings when they have been connected for a long time."

—*Gas Review.*

ALL ground joints should be treated with a mixture of flake graphite and oil, or better with the specially prepared graphite pipe-joint compound. Then, if for any reason it is necessary to break the connection, it can be easily done without danger of taking part of the joint with it.

MANUFACTURERS of injectors are finding it largely to their advantage to send out with each injector a small sample of Dixon's Graphite Pipe Joint Compound. An application of this material to the screw threads insures tighter connections and ease in taking apart when necessary.



The Lubrication of Locomotives

Do you take any precautions to avoid hot crank pins or bearings, groaning cylinders, laboring valves and like friction troubles?

All these difficulties *can* be avoided by the use of

Dixon's Flake Graphite

This lubricant begins at the beginning, going directly to the microscopically rough metal surfaces—and all metal surfaces are microscopically rough.

It smooths off these minute irregularities, becoming attached intimately to the metal itself. Thus actual metallic contact is prevented, friction and wear materially lessened, cutting and seizing made impossible.

And just one thing more. Graphite, you know, is the *only* lubricant that can render this lubricating service.

Shall we send you a free sample?

Joseph Dixon Crucible Co.
Jersey City, N. J.

GRAPHITE

VOL. XII.

JANUARY, 1910.

No. 1.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

COPYRIGHT, 1909, BY JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.



Happy New Year!

to you from "Graphite"—may its happiness begin afresh with each new day throughout the year.

AN ENGINEER WRITES ON GRAPHITE

As to gas engine work, I find that powdered flake graphite will keep the cylinders, valves, etc., in better shape than by using oil alone. I allowed each of my five gas engines to inhale a teaspoonful of graphite once every three hours during a twelve hour run, and during three years I had no occasion to take the pistons out because of loss of compression. In taking apart the hardest-worked of my 100 horsepower engines (three cylinder verticals), I found the cylinders with a mirror glaze on them and the rings neatly polished and easily moved in their grooves—no sticking anywhere. I used three pounds of powdered flake graphite in each crank case with one-half barrel of oil. I found I got good results, and very little wear on the bearings with splash lubrication.

I now have a twin-tandem horizontal gas engine of 180 horsepower, operating an alternating-current generator, which has given a remarkably large amount of trouble due to heating of bearings since its installation three years ago. I took a position where this engine is a few months ago, and so far have overcome the heating of the piston pins and am gradually overcoming the heating of the main bearings. The pressure on the piston pins is about 1500 pounds per square inch, too high for good results. That on the main bearing is about 1050 pounds. The chain-oiling system is used on the main bearings. I mix graphite with Twentieth Century gas-engine oil, and find that even a good filter will not remove much of

the graphite from the oil, and hence I get good results. The main bearings operate at a temperature of about 155 degrees and attain this temperature in two hours after starting. Then, of course, radiation equals the production of heat and a stationary temperature results. I let this engine inhale coal oil and powdered flake graphite through the intake when running and have fine compression. The engine starts easily and the valves never stick. There is metallic packing between the cylinders, and the rods are like mirrors, and I consider graphite my best ally.

I have mentioned powdered flake graphite each time, as that is the kind I mostly use, from force of habit, probably. I know what it will accomplish and don't know what the other will. I use flake for heavy slow-speed bearings (when heated), and the powdered flake for high-speed bearings, and where oil and graphite must be fed through the ordinary small oil cups. The enormous number of uses to which graphite is put nowadays, would take a long time to record. I personally have graphite in my engine room.

Cleveland, O.

D. L. FAGNAN.

—*Power and The Engineer.*

STOVAINE is a new anaesthetic, not a new stove polish. It is said to contain no flake graphite but "boundless possibilities."

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,

Plumbago, Black Lead.

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BALTIMORE OFFICE, 1005 Union Trust Building.

BUFFALO OFFICE, 72 Erie County Savings Bank Building.

ATLANTA OFFICE, Fourth National Bank Building.

REMEMBER YOUR HORSES TO KEEP THEM SHOD

We are again in the grip of winter. Those who own or care for horses, should make it a point to see that their beasts are sharp shod. How often, as we pass along, we see one of the faithful animals trying to drag its load over the icy streets slipping this way and that. The driver, presumably a being possessing human intelligence, seems either to be ignorant of the effort the horse is making, or else is yelling at him in raucous tones, or perhaps applying the whip every now and then as indicative of his superior horsemanship.

To note the rising anger of many drivers as their horses slip about, one might be led to suppose that the horses were performing for the sole purpose of aggravating their drivers, enjoying themselves the while.

It is cold, hard business policy to keep your horses well shod during the season when the streets are apt to be covered with snow and ice. Anyone with even a drop of the milk of human kindness in his veins, should feel sorry for the poorly shod horse as he so faithfully tries to drag his heavy load along, slipping at every step. Even if this common garden variety of sympathy is missing, callous business sense indicates the adoption of proper care of your horses.

If you are a manufacturer or distributor and have a number of teams, look into this matter or delegate it to some competent party. If you are a driver, remember that the horse is trying to do his best and that anybody can call names and crack a whip. Try a little kindness on your horses. It pays in cold dollars and cents.

We have a very interesting and valuable booklet, entitled "The Horse," which contains a large amount of information of interest to those who own or care for horses.

EXTREMES

In making up the forms for the current issue of GRAPHITE, we read in the *Ticonderoga, N. Y., Sentinel*, that the workers in the Dixon graphite mines and mills are enjoying the pleasure of sleigh rides, skeeing and skating.

At the same time we read in the *Crystal River, Fla., News* that the workers in the Dixon Cedar Mill are putting in their spare time in their gardens. The celery plants which were set out the middle of November, are looking fine, and strawberry plants are growing nicely.

Here at Jersey City we have neither one nor the other—but we are only "three minutes from Broadway."

DIXON IN ATLANTA

The South is growing and so is Dixon. Naturally a combination suggested itself, and as the result the Joseph Dixon Crucible Company has opened offices in the Fourth National Bank Building, Atlanta, Ga.

Mr. J. H. Lewis, who is well known to the stationery trade in the South, having a previous connection of twenty years with the Tower Manufacturing Company, has been made manager of this Dixon Branch, which will have for its territory North and South Carolina, Georgia, Florida, Alabama and Mississippi. The South is Mr. Lewis' home, and he is in close touch with the general business situation there. Mr. Lewis tells us that civic pride is strong in Atlanta, and this, together with ambition and initiative, is building up Atlanta to the position of a Southern Metropolis. The South is coming to her own rapidly and Atlanta is leading the way.

The Dixon Company's experience quite bears out Mr. Lewis' statements, and that is why a permanent office is established in Atlanta.

BABBITTING A JOURNAL BOX

Will babbitt metal stick to an ordinary shaft if it is not oiled?—F. J. L.

If the shaft is perfectly clean, the metal will sometimes give annoyance by sticking. It is a good practise to give the shaft a coat of oil or graphite, or in some cases wrap it with a sheet of paper.—*Power*.

PREVENTING CORROSION OF STEAM MACHINERY

By W. H. WAKEMAN

Chapter XX

This chapter is devoted to marine work, as there are many points about a steam plant that is located on board a ship, that are very different from those which correspond to the same on land. Space is too valuable in large cities to be wasted in allowing too much room for the various parts of a plant, and sometimes this economy of space is carried too far, making the usual operation and the repairing of them very expensive. However, on board a ship the total space is limited, therefore all of it must be utilized to the best possible advantage.

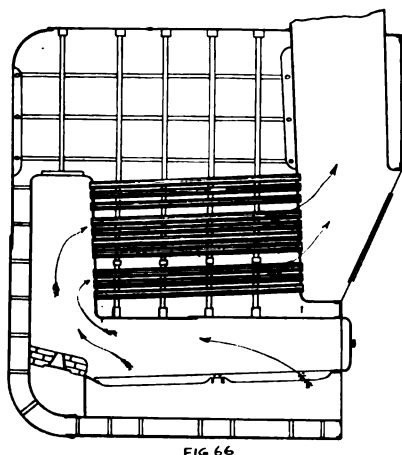


Fig. 66 is an old fashioned boiler, but many of them are still in use, and are giving satisfactory results. It is rectangular in shape, hence requires many braces in order to prevent some of its parts from collapsing, and to keep others from bulging out of place. It is the wet bottom kind, so-called because the water leg is extended underneath the ash pit, thus presenting a water surface to absorb even what heat may find its way to the part which contains clinkers and ashes.

This boiler, in common with nearly all kinds used in marine service, is short for its diameter, hence the grate surface seems to be excessive, yet this is not necessarily true because there are a large number of tubes above the furnace through which the hot gases pass on their way to the stack. This is called a single ended boiler, because there is but one furnace that is fired from one end only.

The intense heat burns paint off from the fire doors and boiler fronts, but if they are treated with Dixon's Polishing Graphite No. 7774 it is possible to keep them in good order with little effort. It may be mixed with signal oil, or with equal parts of linseed oil and Japan varnish until a thin paste is secured, when it is easily applied, and it will not readily peel off.

Fig. 67 is a double ended boiler, because there is one furnace at each end, and the products of partial combustion meet in a chamber that is common to both of them, where the process is completed in some cases but not in others. The outlet from this chamber is not shown in the illustration. The grates shown are located in large corrugated flues, which are a great deal stronger than the plain flues of equal diameter

and thickness. This boiler is more efficient in practice than the single ended class, because the fuel is consumed better, and the heat thus generated is used to greater advantage.

One objection to this form is that when one furnace door is opened to clean the fire, the efficiency of the opposite furnace is greatly reduced on account of cold air rushing in, and sometimes the reduction of temperature from this cause is so great that it causes leakage at the tube ends due to contraction of the metal. If this is repeated often enough, it may cause some of the tubes to fail, making it necessary to repair the

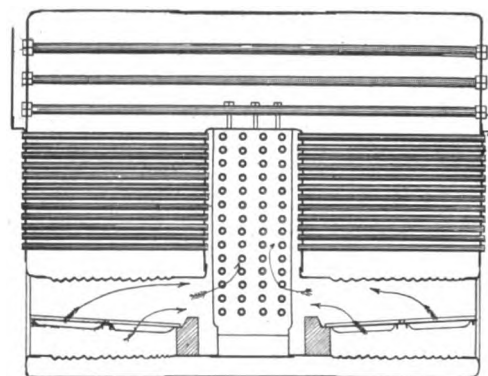


Fig. 67.

damage at once. Of course, this throws two furnaces out of service until repairs are completed. As the lack of sufficient boiler power may seriously interfere with the progress of the ship, no time is lost on the job. Such work is frequently done when the furnace walls, grates and other parts are so hot that it seems impossible for a man to live there, and in fact a boiler repairer must become accustomed to such work gradually, or else he may not survive the first experience without permanent injury.

When a roller tube expander is required on such work (and it nearly always is used), it should be lubricated with Dixon's Graphite, as the great heat renders oil and grease useless in a few minutes, and if tools do not work well on such an occasion the annoyance is great, and it may endanger one or more lives.

(To be Continued.)

NOVEMBER AND THANKSGIVING

A Protest From Minnesota

In November GRAPHITE we said that Thanksgiving is not strictly the "nation's" holiday, as there were two states that did not observe the day, Kansas and Minnesota. One of our friends out in Duluth has called our attention to the fact that Governor Eberhart of Minnesota, in November last, issued the first proclamation for Thanksgiving for Minnesota, in which he said:

"The people of this State are ever mindful of the source from which come all their blessings. Cosmopolitan as they are, blending here the blood, the heart, and conscience of all that is best in old-world civilization, they approach the Thanksgiving period with sincere appreciation that 'All good cometh from on High'."

We now await the coming in of Kansas.

DIXON's graphite publications sent free upon request.



FORMER SITE OF OLD COOPER RESIDENCE, 4TH AVENUE AND 28TH STREET, NEW YORK CITY.

The picture above shows the junction of Fourth Avenue and 28th Street, New York City, as it looked many years ago. Occupying the center of the picture and directly on the corner of the streets named, is the old Cooper Residence, a portion of which is shown in the picture as a store. This building was originally erected on the present site of Cooper Union, and built largely by the personal labor of the famous Peter Cooper, carpenters at the time being scarce. It was erected without nails, since these were too expensive, being put together with wooden pegs.

When the Cooper Union was planned, the original Cooper residence was removed to the location previously indicated, Fourth Avenue and 28th Street, the junction of the Boston and Albany Turnpikes. At that time it was surrounded by a peach orchard, and was about two miles from the nearest school, which was located on the Bowery. Last year the structure was again taken down and removed to Ridgewood, N. J., where it is again to be erected, since the frame is in good condition, and the old furniture and contents will be restored to it. Quite a contrast to this picture is shown on the opposite page, which is also a view of the intersection of Fourth Avenue and 28th Street. It typifies the difference between the old and the new spirit, as well as the old and new architecture.

It would probably be impossible for Peter Cooper, could he return to earthly form, to appreciate modern construction to-day. Imagine him working along from day to day fastening his home together with wooden pegs, and set this picture

off against the hundreds of gangs working on the modern skyscraper, the beams and girders that weigh tons being bourn up in the air at the ends of what appear to be hardly more than threads as viewed by the by-stander on the sidewalk.

And the rush of it all! Speed is the watch word. For instance, the picture of the modern building shown on page 2097 represents only forty days of work. The steel frame makes these modern miracles possible.

There is one other important factor, however, in the modern building, important because it protects the steel that means the strength and life of the building. The strongest of steel weakens before corroding influences; therefore the necessity of affording a protective coating that will preserve the steel work intact. For this service Dixon's Silica-Graphite Paint has proved unsurpassed. Its pigments, silica and graphite, being inert and practically indestructible, provide an impregnable armor for the steel.

The Hewitt-Brice Building shown on the opposite page, has its massive steel frame protected with Dixon's. On the high class type of office building, such as the Hewitt-Brice Building represents, there can be no chances taken with such a vital material as the paint for the steel. Therefore, no chances were taken, and for the 4,000 tons of steel contained in this building, Dixon's Silica-Graphite Paint was specified and used. The architects were Clinton & Russell; general contractors, Thompson-Starrett Company; steel contractors, American Bridge Company.



PRESENT SITE OF HEWITT-BRICE BUILDING,
4TH AVENUE AND 28TH STREET, NEW YORK.

HEAT AND COLD

Fun With the Vacuum Bottle

In our November issue we printed an article from *Power and The Engineer*, explaining the reason why the liquid in a vacuum bottle remains cold three times as long as it remains hot. The article has caused quite a little comment. A little consideration of the matter and the explanation given, would have shown its incorrectness. The explanation was evidently based on *Newton's Law of Cooling*, which is that "The quantity of heat lost or gained by a body in a second, is proportional to the difference between its temperature and that of the surrounding medium." The statement, "A difference of 180 degrees exerts three times the pressure or tendency to change than a difference of sixty degrees does," is entirely correct, but the conclusion, "the 180 degrees change will take place in one third the time," is wrong.

The writer fell into the error of thinking that this relative rate of change held during the entire time the temperature was falling. This is not true. The rate of change in the temperature of the body originally at the higher temperature decreases as the temperature lowers, until from the original temperature of the second body it cools at exactly the same rate.

We wish now to offer another explanation.

The vacuum bottle consists of a double walled bottle with about $\frac{1}{4}$ inch space between the walls. The surfaces of this interior space are silvered so that the outside of the bottle and the inside of the bottle present a highly mirrored surface.

This glass bottle is contained in a metal cylinder, also highly polished on the outside, so that the bottle, considered as a whole, shows two mirrors facing outward and one mirror facing toward the inside of the bottle. Any ray of heat passing from the outside into the bottle, is opposed by two highly reflecting surfaces. On the other hand, any ray of heat passing from the inside out, is opposed by only one highly reflecting surface. This in itself is sufficient to explain the difference in the rate of cooling, but there is still another reason.

When the bottle is at a temperature above the surrounding medium, rays of heat are radiated from it in every direction and from every point of its surface. On the other hand, when a bottle is at a lower temperature than the surrounding medium, the absorption of heat is hindered by the fact that most of the heat rays strike the bottle slantingly and are reflected at an angle.

The parallel to this condition exists in the manner in which the rays from the sun strike the earth at our latitude during the winter time, the great angularity of a ray with regard to the surface accounting for our lower winter temperature.

These two explanations, we think cover the point in question.

In addition, we desire to add, that the existence of a vacuum between the walls of this bottle, probably does not have much to do with its operation, as radiant heat passes through a vacuum as well as through air or gas, as evidenced by the passing of the sun's rays through the extremely rare atmosphere between the sun and the earth.

FLAKE OR POWDERED GRAPHITE?

I have taken an interest in the discussion of the question as to which is the better, the flake or finely powdered graphite for lubrication. I have used graphite for about fourteen years for all purposes that it can be used for in a power plant. I well remember the first time I used graphite to cool the main bearing on a small slide-valve engine, which had been re-babbitted. After a short time the bearing got hot and it was impossible to make it run cool with oil. I then sent for some graphite, but in my order I did not state that I wanted the flake, and the powdered graphite was sent. This was used with oil on the bearing for a short time, but still the bearing kept on getting hotter. Finally the bearing was washed out thoroughly and the powdered graphite and oil used again, but with no better results. I then decided to get flake graphite. After mixing this with some oil and using it on the bearing for a few hours, the bearing had cooled so that the hand could be put on it without burning. I have tried powdered graphite on a hot bearing many times since, but in most cases with no good results.

I am under the impression that the reason why the flake graphite gives better satisfaction on a hot bearing than the powdered, is because the powdered graphite washes out with the oil more quickly than the flake graphite. The only good use I have found for the powdered graphite, is on manhole and flange gaskets. For lubricating purpose I prefer the flake at all times.

Milwaukee, Wis.

H. JAHNKE.
—From *Power*.

DIXON'S graphite publications sent free upon request.

GRAPHITE PAINT FOR TIN ROOFS

C. A. M., Wilmington, Del., desires to know whether graphite paint is more protective for tin roofs than mineral brown or red paint, provided the pigment in each case is ground in and thinned with pure linseed oil and the minimum of dryer for application.

Answer: The question is a difficult one to answer, as it depends a great deal on the purity and composition of the pigment. There are many so-called graphite paints that are no better than bituminous coal, while some are made from the purest natural graphite and some brands are made from artificial graphite. Then there are mineral brown or red roof paints that may last for years on wooden or shingle roofs, but if applied to tin would permit it to rust in less than one year's time. Poor qualities of graphite or mineral brown and red are disastrous to the oil with which they are mixed, inasmuch as they contain earthy matter of alkaline or sandy nature or free sulphur in sufficient percentage to destroy the binding and wearing properties of the medium.

For many years it was generally conceded that graphite paint was the best paint for the protection of tin roofs, but of late years opinions have differed much on that point, a prominent tin plate manufacturer taking the ground that a galvanic action is produced between the carbon of the graphite and the tin that acts destructively upon the iron. In reply to this, a well known manufacturer of graphite paint says:—

There has been of late a good deal brought out with regard to the tendency of different pigments to increase the corrosion of iron or steel plate. It is perhaps so, that carbon shows a more stimulating action so far as a laboratory test is concerned. We have made some tests ourselves, and while the results are not entirely confirmatory, there are indications in this direction. But the success of graphite paint is based, not upon laboratory experiments, but upon actual service. We think that it is a fact that at the present time graphite and carbon as a paint pigment stands in the very first rank so far as their use as a pigment for protective coatings is concerned, but the essential thing to be considered is, not only whether graphite actually accelerates corrosion when lying in contact with iron and steel in connection with moisture, but whether the paint film, when formed of a proper thickness, is a more durable one than when made with other pigments. We think it is a fair statement to make that corrosion on any structure is the result of a wearing away or a destruction of the paint film itself.

Proper care is not taken to inspect the coating and to provide for repainting at proper times, with the result that the paint covering has often disappeared and corrosion sets in before repainting is resorted to. There is no question whatever about the extreme durability of the carbonaceous coatings. We don't think any one questions the fact that so far as the durability of the paint skin itself is concerned, that they stand away ahead of paints made with other pigments.

Probably the one great weakness of graphite paints is the fact that they are spread out easily, and when a painter runs against them for the first time, he observes that they are apparently very heavy and he immediately proceeds to add some thinner, and, of course, under these circumstances he gets such results that the manufacturer tries to provide

against. When he makes his paint so heavy the painter goes on thinning and he secures a coating which may be only one-half as thick as he would have secured had he applied an iron oxide paint. The manufacturer of graphite paint never had any trouble whatever with tin roofs until the manufacture of tin plate was developed in this country. There is undoubtedly a good deal of pretty fair tin plate made in this country, and there is a great deal that is unfit for service. The fact that a large number of the complaints made may be laid to the tin plate itself, is evidenced by the fact that on a roof you will find perhaps an equal number of plates which show no sign whatever of corrosion, intermixed with an equal number which are very badly pitted. Such a condition as this can only be explained by a lack of uniformity and the quality of the plates themselves. But to anyone who has a doubt on this matter of painting tin roofs, there is a course open which should be entirely satisfactory. Let him first paint the tin with a coating of paint containing an oxide of some metals, red lead or iron oxide. Then let him protect that with a coating of graphite or carbonaceous paint. After this has been done, there can be no trouble whatever about his securing a satisfactory result.—*The Painters' Magazine*.

200,000 MILES ON DIXON'S GRAPHITE WOOD GREASE

The following letter will be found to speak loudly for itself, on behalf of a Dixon product that gives exceptional service in traction car gears.

EASTON AND WASHINGTON TRACTION CO., EASTON, PA.
November 9, 1909.

Joseph Dixon Crucible Company.

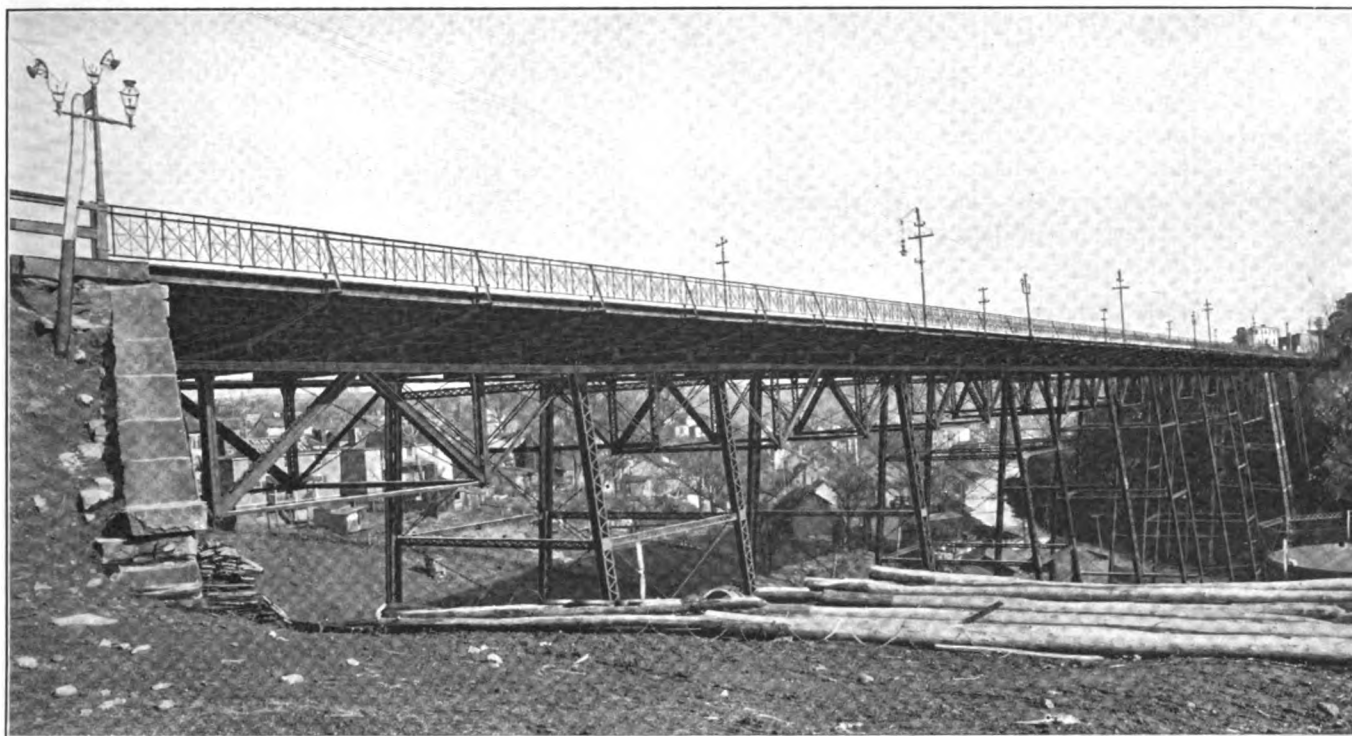
GENTLEMEN:—

A short time ago, I was telling your Mr. J. M. Willits how many miles our cars had made with the use of Dixon's Graphite Wood Gear Grease. I was somewhat mistaken in the mileage I gave him, and therefore, want to correct it. Our cars have made over 200,000 miles with this grease, with new gears and new pinions, and in examining them in the last few days, we find but very little wear. The pinions are simply beginning to get smooth and bright. We feel that this is very remarkable, for we have had some gear grease that has used up pinions for us in a very few months; and I want to say for this grease, that nobody could talk us into any other kind.

Very sincerely yours,
(Signed) W. O. HAY,
General Manager.

A METAL surface, no matter how well polished, will always show under a strong microscope many irregularities. These irregularities, scraping one over another, and constant crumbling away, cause hot and cut bearings. Flake graphite fills up all these irregularities, building up the low spots, and forming over all a thin, tough veneer of marvelous smoothness, and if for any reason the lubricant should fail, there is graphite-to-graphite contact instead of metal-to-metal, and the parts may be in contact for a long time without danger.

—*Mining and Scientific Press*.



RIVERMONT VIADUCT, LYNCHBURG, VA.

THE above cut is reproduced from a photograph of the Rivermont Viaduct, situated at Lynchburg, Va. This is one of the highest highway bridges in the State of Virginia, being 137 feet above the level of the creek below.

The Rivermont Viaduct was painted in the summer of 1907 with Dixon's Silica-Graphite Paint. The city engineer, Mr. H. L. Shaner, who had considerable experience with protective paints, selected Dixon's as best adapted to the service.

MORE MATHESON RECORDS

In the recent New York-Atlanta Endurance Contest, the Matheson Car made the best time and won the cup. We cannot refrain from pointing out in this connection, that the Matheson Company use Dixon's No. 675 Graphite Grease in transmission cases. Of course, this was not responsible for the results secured, but indicates the care and discrimination exercised by this company in all things pertaining to the equipment and success of their cars.

The use of Dixon's Graphite Transmission Greases insures proper lubrication, saves wear, and makes frictional damage impossible. The Matheson Company and all other users have found it so.

FROM A NEW YORK CHEMIST

On Dixon's Silica-Graphite Paint

NEW YORK CITY, Nov. 26, 1909.

Joseph Dixon Crucible Company,

Jersey City, N. J.

GENTLEMEN:—

A little over five years ago, I purchased some of your graphite paint, which was applied to a wrought-iron fence railing, and I thought that you would be interested to know that after standing the exposure of the elements, and the extremes of

heat and cold for over five years, an examination of the iron railing, which was painted with your graphite paint, shows that it has stood the severe test much better than any other paint I have used during the past quarter of a century.

Its adhesive properties, its durability and elasticity, in my judgment, make your graphite paint a most valuable protective agent for all structural or metal work exposed to the elements, and should you at any time care to refer to me, I shall be pleased to place on record my experience in regard to the merits of your product, which I consider stands in a class by itself.

I have used and tested a large number of paints, the makers of which all claimed some superiority over any other when applied to structural work, and I can truthfully state that none has given me the satisfaction that Dixon's Graphite Paint has done, and it affords me pleasure, quite unsolicited, to tender to you this recommendation.

Respectfully yours,

(Signed) ALFRED W. SMITH,
Chemist.

The above letter from a prominent New York Chemist, further adds to the testimony in favor of Dixon's Silica-Graphite Paint. This material is very largely used on exposed structural iron work, and in every case gives thorough and enduring protection.

ADELINA PATTI lately celebrated the 50th anniversary of her debut as an operatic singer at the New York Academy of Music, November 24th, 1859, when she appeared as Lucia, and that it is estimated her voice has earned her about four million dollars.

THE only business that is small in competition is truth telling.

OLIVER WENDELL HOLMES

The following verses are sent us from our Philadelphia Branch with a statement that across the water the Holmes Centenary was widely celebrated, and that these verses appeared in the *Glasgow Herald* under date of August 29th, and that as they seemed to have a peculiar tang and flavor of the "One-Hoss Shay," they thought that the verses might be appreciated by the readers of GRAPHITE.

Have you heard of the wonderful one-hoss shay
Whose sine qua nunquam—so to say—
Was cradled at Cambridge, U. S. A.,
Exactly a hundred years to-day?

Why, the one-hoss shay that he told us about,
Was his very own picture out and out;
For his style—and you know the style's the man—
Was built with the very same poise of plan;
For his heart and his head had an equal share,
And his wit and his sense made a perfect pair;
And 'twas just as your taste and fancy chose
Which you thought better, his verse or prose;
And his whimsical learning—just a touch—
And his sentiment—never a tear too much—
In his humor were set in so clever a way
That he keeps as fresh as his one-hoss shay!

If you never have felt him take your hand
With the grip of a friend that can understand;
If you never have learned to smile and sigh,
And show you were wiping a mote from your eye,
At the very same bits as they used to do
When poor "Little Boston" was something new;
In short, if you don't know the one-hoss shay,
Then the sooner the better. That's all I say.

USE OF GRAPHITE IN AUTO LUBRICATION

Writing in *The Horseless Age* under the heading, "Factors Affecting Lubrication," Jos. A. Anglado says:

The nature of lubricants varies considerably, and the employment of lubricants covers a very wide range—from watches, requiring the finest of sperm or olive oil, up to the heavily loaded gears, subject to shocks and requiring a mixture of heavy grease and graphite, or soapstone. Grease is still much used for railway axles in Europe; it is also suitable for any heavily loaded slow running journals, but it should not be used for high speeds, as the internal resistance (to shear) is so high as to generate considerable heat and cause extra friction. Graphite is coming into more general use every day, and undoubtedly it is of much value where it can be readily applied. It has been tried in steam engine cylinders with great success. On plane surfaces running under heavy pressures and at slow speeds, graphite is superior to oil.

LUBRICATING SCREW THREAD

Whenever a nut or tap bolt is put into place, a little "fat" is always advisable, the good mechanic applying it intuitively. It saves the thread and seat and also increases the efficiency of the screw, giving a tighter pull with a given torque. Where nuts are likely to remain months or years before removal, subsequent operations will be facilitated by employing a proper grease when assembling. If put up dry, the two parts will corrode together and the nuts will have to be cut off or the stud twisted off when removing; if an improper grease is used, this corrosion is still likely to occur. A mixture of a mineral grease and graphite is excellent for the above purpose.

BY TREATING screws or pipe joints with a mixture of oil and graphite, they will not "rust in" and can be readily removed.—*Southern Engineer*.

Dixon's Standard Lumber Crayons

There are the same opportunities for good or poor quality in the making of lumber crayons that exist in the manufacture of other products.

We determined at the begining to standardize all our materials and thus maintain Dixon's Lumber Crayons in first position—and we've done it.

Write for our special circular on Lumber Crayons.

JOSEPH DIXON CRUCIBLE CO.,
JERSEY CITY, N. J.

USE OF GRAPHITE

New England Automobile Journal, Technical Department:

What is the proper way to introduce graphite into the cylinder of a gas engine in order to obtain the best effects and at the same time not cause short circuit of the spark plug? I have read with considerable interest the discussions relative to this, but so far I have failed to obtain results, as the graphite invariably fouls the spark plug.—F. C. D.

Cranston, R. I., Sept. 22.

Answer.—The best way to use graphite in a cylinder, as the writer has found by experiment, is to blow small quantities of it on the walls, through the base of the engine, with a small bellows such as is used for insect powder. The writer has tried feeding it with oil, but it will invariably work by the rings, and as it is a good conductor of electricity, the plug will become short circuited. But little graphite is required, as it is not used up as is oil, but becomes imbedded in the open pores of the metal.—*The New England Automobile Journal*.

THE QUESTION OF LIFE

WHO ARE YOU?

That seems an easy question to answer; but of all questions it is one of the most difficult. There are a great many people who could not answer it if you put it to them. The story is told of the philosopher Schopenhauer that, while walking abroad during one of his melancholy moods, he almost stumbled over a boy on the street. The boy sprang aside and said, "Who are you?" The philosopher shook his head sadly and answered, "How I wish I knew!" There are a great many of us who do not know who we are; we live in certain houses on certain streets; we pursue certain avocations; but we do not know who we are. But while it happens that a man does not know who he is, his acquaintances know, because whether we wish it or not, whether we are conscious of it or not, every man is always answering that question. In any assemblage where men of distinction sit together, you pick out one man and ask who he is, and your question is answered by a name. That name is all you wish to know. It tells you who that man is because it tells you what that man is. Abraham Lincoln means one kind of man to you, and Aaron Burr means another.

That question is answered very differently at different periods in life. There are two natures in every one, struggling together; sometimes one nature is in the ascendant, sometimes the other, and we are different persons at different times. Re-read that striking psychological story of Edgar Allan Poe, "William Wilson," in which he describes a boy at school in an old Elizabethan manor-house, later at Eton, afterward at Oxford, and then as a young man in Paris; describes him contending against his better nature personified in another personality; these two boys, looking alike, wearing the same clothes, having the same manners, in constant conflict, the baser nature fighting against the higher nature. Finally, in a moment of passion, the baser boy slays the higher boy and then he becomes William Wilson. You remember that striking story of Stevenson's, "Dr. Jekyll and Mr. Hyde." If you had asked Dr. Jekyll at the beginning who he was he would have told you that he was a man of gentle impulses, of scholarship, refinement and beneficence. If you had asked

him that question the day he died, he would have told you that he was a scoundrel; that he was cruel, brutal and a murderer; and both answers would have been true.

"Who am I?" I am fundamentally what I love. Do I love truth? Then sooner or later I shall become true. Do I love nobility? Then ultimately, with much stumbling and many faltering steps, I shall climb to the height where nobility dwells, above the strife for place and power, above low aims and self-seeking. Where your heart is, there, ultimately, you shall be also.

"Who am I?" I am what I believe. Not what my lips say I believe, but what my character proves I believe. You may repeat a thousand times the Apostles' Creed, beginning "I believe," and yet you may not believe a word of it. It is idle to say that you believe in the forgiveness of sins when in your heart you cannot forgive the friend who unintentionally harms you, or the person who intentionally hurts you. You may declare that you believe in the life of the world to come; but if you live wholly in this life, like the worm in the ground at your feet, then you do not believe it. Character, and character alone, is belief; that is to say, conviction reinforced by will.

And it is not a question of what you are to-day; it is a question of what you are becoming. We are all put to the test; but the test is not conformity to moral rules to-day; the test is, "Which way are you going?" You may fall a hundred times and then in the end you may climb to a height never reached by many a man or woman who has never been guilty of an overt sin. What you wish passionately to become, you will ultimately be; and in the strife to become what you wish your real self will emerge.

A gifted man had one great and tragic weakness, as his father had had before him—a man of great distinction and genius, but with a passion for drink. He once said, "I was born with a tiger in my blood." Often he fell terribly because he fell on a great stage, and there were those who spoke of him as a lost soul. But he never ceased to strive and in the end he overcame. Who was he? At first he was a stained and broken man, on the road, apparently, to complete wreck; at the end he was not only one of the first artists of his time, but a loyal, victorious, generous, inspiring human spirit.—*Outlook*.

THIS MAY NOT MEAN YOU, BUT—

If you work for a man, in heaven's name, work for him. If he pays wages that supply you your bread and butter, work for him, speak well of him, think well of him, stand by him, and stand by the institution he represents. I would not work for him part of his time, but all of his time. I would give an undivided service or none.

If put to the pinch, an ounce of loyalty is worth a pound of cleverness.

If you must vilify, condemn and eternally disparage, why resign your position, and when you are outside damn to your heart's content. But, I pray you, so long as you are a part of an institution, do not condemn it. Not that you will injure the institution—not that—but when you disparage the concern of which you are a part, you disparage yourself.

And don't forget, "I forgot" won't do in business.

—ELBERT HUBBARD.

SOME LUBRICANTS USED FOR MOTOR CARS

Under the above heading there appeared some articles by H. W. Slauson in *Motor Age*. These go quite carefully into automobile lubrication. We are glad to be able to quote some portions of the article which deal with graphite.

Graphite as a lubricant can be classed neither as an oil nor a grease, and consequently must be placed in a division by itself. Although in some respects graphite alone will serve as a lubricant, in motor car practise it is not so much a competitor with oils and greases as it is an adjunct and help toward the proper performance of their duties. In such cases it is mixed with oils in the proper proportion and the two work together to give what is generally conceded to be a maximum lubricating effect.

Unlike oils and greases of both animal and mineral kinds, graphite is not a hydro-carbon, but is a form of the latter element alone. This form of carbon is mined and is then reduced by a process which separates the graphite from the gangue and impurities in which it was originally embedded. Graphite appears in two forms—the crystalline, flake, and the amorphous. The former, as its name implies, appears in its final commercially-pure state in the form of thin scales, which may be ground to almost any degree of fineness. The amorphous graphite, on the other hand, has no regular formation and the particles of which it is composed are granular and dull in appearance. In a series of tests which have been made by several scientists, it has been found that as a lubricant, the flake form of graphite is far superior to the amorphous, and that the latter, owing to its structure, will break down under much lighter loads than is the case with the former, which has been found to withstand exceedingly high pressures on the moving surfaces between which it is placed.

A peculiar quality of graphite possessed by no other form of pure carbon is its unctuousness, which reduces the co-efficient of friction of the surfaces between which it is applied to a point hardly equaled by a perfect oil. Sperm oil has the greatest friction-reducing qualities of any known lubricant, but it has been found by laboratory tests that a mixture of grease and flake graphite possesses a lower co-efficient of friction than this oil. This is probably due to the fact that the particles of the graphite enter all the holes and pores of even microscopic size in the surface of the metal on which it is applied, and a smooth, slippery coating is thus formed. When a grease or oil is applied to this surface, the resulting co-efficient of friction is reduced to a minimum, and it is for this reason that graphite gives such splendid results when mixed with whatever other lubricant is to be used and applied to the gears, bearings or cylinders of a motor car.

In addition to the increased lubricating effect obtained by the use of graphite, it is claimed that the bearings or gears to which it is applied cannot become unduly heated. Many instances have been cited in which a hot bearing has been successfully operated after the application of a small amount of this form of carbon after all other lubricants had failed to obviate the trouble. This brings up the fact that graphite may be said to have no chill, melting, flash, or burning point, and in consequence it never will flow from or evaporate from the surfaces to which it is applied. The fact that this substance is practically non-combustible, will be realized when it is stated that it enters largely into the composition of the cruci-

bles in which many metals are melted, and since it can stand this high degree of heat with no physical or chemical change, it is evident that any temperature which may be generated in a bearing cannot cause the graphite to lose its lubricating qualities.

The Joseph Dixon Crucible Company has a very large plant in which all kinds of graphite products are manufactured. The graphite, as reduced by this company, is entirely of the flake variety and enters into the composition of a large line of motor car lubricants. Although it was stated above that graphite, by itself, forms a sufficient lubricant in many instances, its use in this manner in the majority of cases is impracticable because of the fact that its light and flaky form allows it to be blown from the moving parts too easily. When added to a heavier lubricant, however, it will be kept in place and perform its functions even after the oil or grease with which it was mixed has worn away. The flake graphite in its unmixed state is often used on pistons, valve seats and stems.

The Dixon Company supplies the flake graphite in either the pure state or mixed with different weights of oils and greases, for all parts of the motor car. When supplied in the latter form, the graphite appears in suspension in the lubricant—that is, undissolved or not chemically combined with the oil or grease, but merely mixed with it to form a compound. Of course, the more thorough and complete the mixture, the better will be the results, but it is practically impossible to combine or dissolve the graphite so that it appears in any other state except in suspension. All things considered, however, it is probably fortunate that the graphite is uncombined with the oil or grease, for as the latter acts as the body which serves to retain this graphite as a permanent lubricant, the one will be worn away, leaving the other to fulfill its function continuously.

For light work the graphite is ground into very fine flakes, and in this form and when combined with a light oil, the resulting lubricant is often used for such delicate instruments as speedometers and odometers. The purchaser can add the pure flake graphite to any form of lubricant, but if the substance in question is a heavy grease, it is better to warm it nearly to the melting point so that the graphite can be mixed with it the more thoroughly. As stated before, graphite of the proper degree of fineness can be added to the oil or grease of any part of the car, and when used for cylinder lubrication, the proportion should be one teaspoonful for every pint of oil. It is better to add this to the lubricant in the crankcase.

LUBRICANT FOR FITTING ALUMINUM THREADS

When screwing an aluminum article on to an iron or steel part, much trouble is often experienced by the breaking and tearing of the threads of the softer metal. This can be prevented by lubricating the screw well with a mixture of oil and graphite.—*Railway Machinery*.

Mrs. Kicker: "If you are going to another of those banquets, I don't suppose you will know the number of the house when you get back."

Mr. Kicker: "Oh, yes I will; I unscrewed it from the door and am taking it with me."—*Kansas City Journal*.

FROM OUR CREDIT DEPARTMENT

We have, at times, our troubles with our customers who claim they have sent us a check and become provoked when a statement is sent them the first of the month, calling their attention to bills which appear to be unpaid.

Recently one of our customers received a statement and wrote back a letter which was a trifle tart, advising us to look at our books, and we would see that a check had been sent at least fifteen days before the statement was made out. We could find no record of the receipt of this check and wrote them accordingly.

The day after our letter was sent, we received from this customer an envelope containing another envelope, in which the check had been mailed, but as the original envelope had been addressed to

JAMES DIXON TRIMBLE Co.,

JERZY CITY, N. Y.,

it did not reach us, and had been returned by the Post Office Department.

This is one of the most curious of the many eccentric forms in which the Dixon Company has been addressed, and will be placed among the prize-winning class, particularly on account of the phonetic spelling of "Jersey."

BENJAMIN FRANKLIN

January 17th is the birth date of Benjamin Franklin. His philosophy, though written over one hundred years ago, is still of as much value and interest to-day as then. Thus it proves itself to be true philosophy.

January celebrates the anniversary of his birth, and since the New Year is the date on which we all resolve to be better, it is fitting that we reprint what Franklin has to say on Optimism and Pessimism, taken from Brentano's "Wisdom of Benjamin Franklin." Of course, we all know what optimism and pessimism is, but note the simple clearness with which Franklin states it. How strong the advantages of optimism are painted, and how strikingly the disadvantages of pessimism are delineated. We quote:

There are two sorts of people in the world, who, with equal degrees of health and wealth, and the other comforts of life, become, the one happy, and the other miserable. This arises very much from the different views in which they consider things, persons, and events; and the effect of those different views upon their own minds.

In whatever situation men can be placed, they may find conveniences and inconveniences; in whatever company, they may find persons and conversation more or less pleasing; at whatever table, they may meet with meats and drinks of better and worse taste, dishes better and worse dressed; in whatever climate, they will find good and bad weather; under whatever government, they may find good or bad laws, and good and bad administration of those laws; in whatever poem, or work of genius, they may see faults and beauties; in almost every face, and every person, they may discover fine features and defects, good and bad qualities.

Under these circumstances, the two sorts of people above mentioned fix their attention; those who are disposed to be happy, on the convenience of things, the pleasant parts of conversation, the well-dressed dishes, the goodness of the

wines, the fine weather, &c., and enjoy all with cheerfulness. Those who are to be unhappy think and speak only of the contraries. Hence, they are continually discontented themselves, and by their remarks, sour the pleasures of society, offend personally many people, and make themselves everywhere disagreeable. If this turn of mind was founded in nature, such unhappy persons would be more to be pitied. But as the disposition to criticise, and to be disgusted, is perhaps taken up originally by imitation and is grown unawares into a habit, which, though at present strong, may nevertheless be cured, when those who have it are convinced of its bad effects on their felicity, I hope this little admonition may be of service to them, and put them on changing a habit, which, though in the exercise it is chiefly an act of imagination, yet has serious consequences in life, as it brings on real griefs and misfortunes. For, as many are offended by it, and nobody loves this sort of people, no one shows them more than the most common civility and respect, and scarcely that; and this frequently puts them out of humor, and draws them into disputes and contentions. If they aim at obtaining some advantage in rank or fortune, nobody wishes them success, or will stir a step, or speak a word, to favor their pretensions. If they incur public censure or disgrace, no one will defend or excuse, and many join to aggravate their misconduct, and render them completely odious. If these people will not change this bad habit, and condescend to be pleased with what is pleasing, without fretting themselves and others about the contraries, it is good for others to avoid an acquaintance with them; which is always disagreeable, and sometimes very inconvenient, especially when one finds one's self entangled in their quarrels.

DIXON'S INDELIBLE PENCILS

In the October issue of GRAPHITE, we made mention of the fact that one of the very largest shipping and commission merchants in New York, who had been in the habit of using foreign made indelible pencils, had thoroughly tested Dixon's with the result that they found Dixon's the most satisfactory indelible pencils they had ever had, and have permanently adopted them for use in all departments.

We did not mention the name of the merchants, as we said we hesitated to do so without permission.

We are now pleased to advise our readers that the merchants are the well known firm of Arkell & Douglas, Inc., Shipping and Commission Merchants, export and import, with offices in New York, London, and in Australia, Africa and South America.

WE have many gratifying communications which indicate the excellent satisfaction that the Dixon Brushes are giving our customers. The following is typical of many of these communications:

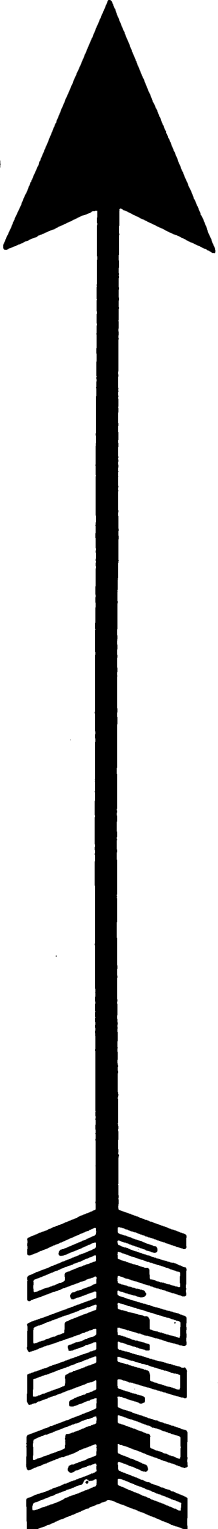
"Ship one set (sixteen) graphite brushes, $1\frac{1}{8}$ " x 1" x $2\frac{1}{2}$ ", slotted $\frac{1}{4}$ " x $\frac{5}{8}$ " for use on 55 K. W. Generator, being a duplicate of part of your shipment of September 14th."

The Dixon Company have a valuable and interesting little booklet, which we will be pleased to send anyone who is interested in the brush subject. This booklet contains much valuable information pertaining to commutation.

“Graphite as a Lubricant”

11th Edition

This edition is just off the press with all the latest information on the use of graphite right down to date.



This is a standard booklet on graphite lubrication gotten out by the Dixon Company every two or three years. The 11th edition, fresh from the press, is a complete revision of the previous edition and brought right down to 1910.

If you have had any previous issues of “Graphite as a Lubricant”, you will, of course, send for this newest one. But if you have never seen any former editions don’t make the mistake of missing this one.

This editions contains scientific data prepared from real experiments made by scientists of repute, also experiences of practical men who have learned by doing.

“Graphite as a Lubricant”, Eleventh Edition, is printed in big, readable type with wide margins. Easy to read and worth reading.

Write for free copy 190-C.

Joseph Dixon Crucible Company,

Jersey City, N. J.

GRAPHITE

VOL. XII.

FEBRUARY, 1910.

No. 2.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

DIXON'S "FLAKE" GRAPHITE

The word "flake" may almost be considered as a trade mark for Dixon, as that word was first applied to graphite by the Dixon Company, and applied to the Ticonderoga graphite in order to distinguish that particular graphite from the well known ceylon graphite and the old time amorphous graphite.

The Ticonderoga graphite, like the Ceylon graphite, is a foliated form of graphite, but the foliations of the Ticonderoga graphite being much thinner than the foliations of the Ceylon graphite, it was desirable to distinguish between them in some way, and after careful consideration the word "flake" was selected.

The Ticonderoga graphite differs from the Ceylon graphite not only in the foliations or flakes being much thinner, it also differs in that the flakes are far tougher and more durable than the flakes of Ceylon graphite. It is because of this difference that the Ticonderoga graphite is so much superior to either the Ceylon or any other form of graphite for lubricating purposes. The marvellously thin flakes of Ticonderoga graphite when used for lubricating purposes, are carried over the bearing surfaces by the oil and become firmly attached to the microscopical irregularities of the bearings, forming a veneer-like surface of great endurance and wonderful smoothness.

When you send an order to your dealer for Dixon's Ticonderoga Flake Graphite you will get precisely what you order, and you will know that the article is genuine beyond dispute and exactly as represented, as the Dixon Company puts the goods up in characteristic packages and no expense or trouble is spared in having the goods absolutely uniform at all times.

For many years the Dixon Company has been building a name and trade mark for this particular brand of graphite.

The Dixon Company does not put up this kind of graphite with the imprint of any dealer, and does not permit any dealer to put up this graphite under his own name. In this way the Dixon Company has endeavored to protect the user of graphite from being imposed upon with graphites that may look all right but which may contain large quantities of very injurious impurities in the way of grit. Graphite is a strong coloring pigment and readily yields its own color and polish to any

impurity. It is therefore very necessary for the user of graphite to be very careful in purchasing graphite, and a very small quantity of impure graphite will quickly ruin an expensive piece of machinery.

GRAPHITE OR TALC?

EDITOR *The Horseless Age*:

In "Hints on the Care of Tires," in your issue of the 13th inst., you in part say: "It has been recently proposed to use flake graphite to lubricate the inner surface of the cover, but we have not yet heard regarding experiments with this material for this purpose."

For more than a year I have been using and recommending the use of flake graphite. I consider it so much superior to talc that the latter does not enter into competition with it. Early in the summer I wrote to the manufacturers of the tire which I use, calling their attention to the advantages of flake graphite as a lubricant for tubes.

Flake graphite will adhere to an inner tube for at least a year, whether the tube be carried loose in the car or in use in a casing. Talc will not adhere to a tube in any considerable quantity, and will chase around in the casing until it all collects in one place.

A lubricant that will not adhere to the parts creating the friction must be considered as something of a joke. I am inclined to believe that there is as much difference between flake graphite and talc in preventing friction between tube and casing as there is between talc and brook sand.

WILLIAM HINDS.

—*The Horseless Age*, October 27, 1909.

HOW CHAMPAGNE HELPED THE DOCTOR TO WRITE LETTERS

It is said that when Sir Andrew Clark, Mr. Gladstone's physician, recommended a patient to drink wine the latter expressed some surprise, saying he thought Sir Andrew was a temperance doctor, to which Sir Andrew Clark replied: "Oh, wine does sometimes help you to get through work; for instance, I have often twenty letters to answer after dinner, and a pint of champagne is a great help." "Indeed," said the patient, "does a pint of champagne really help you to answer the twenty letters?" "No, no!" said Sir Andrew, "but when I've had a pint of champagne I don't care a rap whether I answer them or not!"

You won't be happy, till you get Dixon's.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J., U. S. A.

**Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.**

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THE MAGIC OF KINDNESS

There is nothing that will so soon win the esteem and good will of others as kindness.

To some men kindness comes without effort, in fact it seems to be one of the gifts they were born to; for others it appears to be unattainable no matter how much they may strive for it.

There are a few men who are exceptionally attractive and likable by temperament and disposition, carrying with them everywhere an atmosphere of kindliness and good humor, always unselfish and obliging, and endowed with such graces and charm that every one likes and praises them.

There are others who are not attractive in personal appearance and yet who endeavor to please, but nevertheless they seem to fail because of the lack, to some degree, of proper tact; or because of some momentary loss of temper that spoils their effort to be diplomatic and kindly.

A man to be generally liked must always, under all circumstances, show the true kindness which springs from a good heart; a good heart is perhaps the most important thing of all; the one quality which, were it universal, would transform the earth.

The man who never forgets to be kind whenever there is opportunity, has laid the cornerstone of a satisfying popularity. Kindness in its broad sense implies fairness also. If you are kind to a person you must of necessity, if called on to judge him or to decide between his interests and those of another or your own, be fair to him.

There is nothing a man feels sooner or more keenly than a lack of fairness in the treatment he receives. The demand for it springs from the same universal instinct that claims justice, which is fairness; the very children understand it and are quick to condemn anything in their work or games that "is not fair."

Kindness also carries with it unvarying courtesy and politeness even to those who are churlish and rude. When you are a host, treat all your guests, no matter what difference may exist between them, with equal attention and consideration and let your intercourse with them be conversation and not have the talking all on one side.

Kindness also in its full sense is not confined to demeanor, but includes generosity, and a man should have the disposition to share what is good and desirable with his friends and companions and to bestow of his abundance upon the needy. It is better to help as many as you can, even if it be but a little, rather than to do a great deal for a few. It is important to remember, too, that even kindness must be exercised with tact, or it may defeat its own object. A tactful man can refuse a request and make a friend, where a blundering, blunt, untactful man will alienate a friend in granting a favor. Tact is the indispensable social lubricant without which, no matter how well adjusted the machine may be, there will be friction and unpleasant creaking. These thoughts come to us from the *Cincinnati Inquirer*.

THE VALUE OF QUALITY

All works of quality must bear a price in proportion to the skill, time, expense and risk attending their invention and manufacture. Those things called dear are, when justly estimated, the cheapest; they are attended with much less profit to the artist than those things which everybody calls cheap. Beautiful forms and compositions are not made by chance, nor can they ever, in any material, be made at small expense. A composition for cheapness, and not for excellence of workmanship, is the most frequent and certain cause for the rapid decay and entire destruction of arts and manufactures.—RUSKIN.

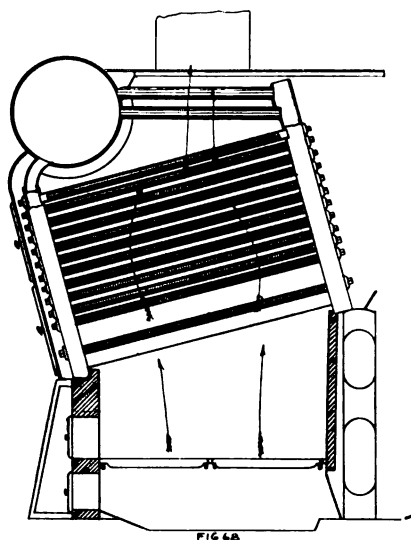
"My opponent's argument," said Senator Doliver in a recent campaign, "has about as much logic—Did you ever hear about the young woman in Fort Dodge? One spring morning she sat on the piazza of her pretty little home sewing a button on her husband's coat. The husband himself appeared and she said, fretfully, "It's a perfect shame the careless way the tailor sewed this button on. This is the fifth time I've had to sew it on again for you."—*Everybody's*.

PREVENTING CORROSION OF STEAM MACHINERY

By W. H. WAKEMAN

Chapter XXI

Fig. 68 is a water tube boiler designed for marine work, in which the grate extends the whole length of the tubes. This gives the appearance of a very wasteful boiler, but this objection is met by increasing the rows of tubes until there is sufficient heating surface to absorb the heat in generating steam. The steam drum is placed crosswise in order to utilize space to the best advantage. For the same reason it is located at the lowest end of the tubes, which is contrary to general practise for land boilers. However, there are two rows of tubes extending from the opposite header into the steam drum, and they provide sufficient circulation of water at this point. Such a boiler has a great many joints in proportion to the power developed, owing to the short tubes adopted. There is a faced or ground joint at each end of every tube, and these must be taken apart every time that



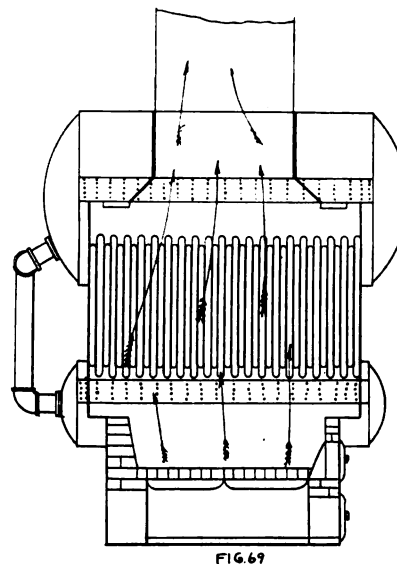
the boiler is cleaned. The design makes it possible to clean these tubes thoroughly, but unless these surfaces are intelligently cared for, much trouble will result. A hand hole is placed in the header opposite the end of each tube, and this is covered by a circular plate on the outside, and as packing cannot be used here it is necessary to grind the surface until a water-tight joint is secured, even under high pressures. A very slight imperfection is sufficient to allow sediment to collect, especially if it has been necessary to use salt water for any reason, and this gets no better until the plate is taken off, the surface cleaned thoroughly and reground with emery, ground glass or something similar. If these joints are then given a very thin coat of Dixon's Graphite Pipe Joint Compound, it will prevent rust and corrosion at these points. The threads of the bolts and nuts used here should also be treated with the same compound.

Fig. 69 is another short boiler containing many water tubes, which connect a large steam drum at the top with two small water drums at the bottom, although only one is seen in the illustration. These drums are also connected by a circulating pipe as shown at the left hand side. One great problem in the design of such boilers is to provide a way for quick repairs, as

one or more tubes may fail when long delay in replacing the broken parts would be both expensive and dangerous. The length of these tubes is always less than the diameter of the upper drum, hence an old tube can be cut out at both ends and a new one inserted from the inside of the larger drum and duly expanded until the joints are tight.

This makes it necessary to provide a man hole in each drum in order that the work may be done with the least possible delay. If the covers are packed with rubber gaskets, it is bad policy to smear them with red lead, although some of our older engineers seem to think that a tight joint can be made in no other available way. This is a mistaken idea, however, and it has been proved so in thousands of cases. Even where the surfaces are not as smooth and true as they might be, an up-to-date rubber gasket will make a tight joint without daubing it with red lead, or anything else to make it stick to the metal. On the other hand, there may be a good reason for using something that will prevent it from sticking to the boiler head.

In my plant there are boilers that are fitted with flanged man holes, therefore the bearing surface of a gasket is determined by the thickness of the shell, or head, as the case may



be. These were originally fitted with lead gaskets, but it was not practical to make the joints tight after the covers had been taken off and replaced, therefore rubber gaskets were substituted. They work well, but the narrow surface allowed results in cutting the gasket down almost to nothing as soon as steam pressure is applied. A tight joint is the result in every case, and there is not enough rubber left to blow out under pressure. A new gasket is used every time a cover is removed.

On many boilers in the same plant these surfaces are broad, hence a gasket is only compressed a trifle until it makes a tight joint. In such a case it is better to let the gasket stick to the cover, but use Dixon's Graphite on the other side. This will prevent it from sticking to the head or shell, hence it may be used several times. This may not be considered very essential in places where it is convenient to call at a store and secure whatever is required with little trouble and delay, but suppose that a man hole cover must be removed for making repairs, and while doing this the gasket is spoiled.

A search fails to reveal another of the same size, and the steamship on which this boiler is located is 500 miles from the nearest supply house. What would be done in such a case? A piece of small hose might answer the purpose until more suitable material could be secured, but it is much better to take the precaution above mentioned, then the old gasket can be used or a new one put on, if it is on hand and the engineer deems it advisable. A considerable practise and observation along this line has convinced me that a gasket which already adheres tightly to the cover, is less liable to blow out the first time that pressure is put upon it, than a new one which has no hold on the metal.

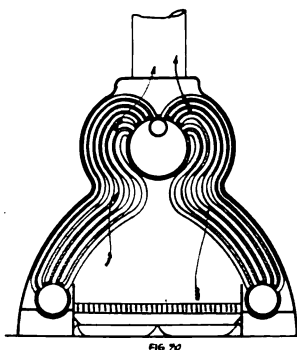


Fig. 70 is a boiler that consists of many bent tubes, connecting two mud drums with one steam drum. The tubes are bent into fantastic shape, thus giving large heating surface for a small floor space, but these tubes cannot be cleaned by any ordinary mechanical means, and if one of more becomes coated with scale and consequently burnt out, repairs cannot be made without removing other tubes that are in the way.

The effect of circulation in this boiler is to deliver water into the steam space, therefore the steam delivered may be wet, although the steam drum is located directly above the furnace, hence receives much of its heat. A large pipe at each end (not shown in the illustration), allows water to flow downward without encountering the upward currents.

An iron casing or shell is required for this boiler, and as this must be protected from the fierce heat generated, Dixon's Refractory Graphite Bricks should be used for this purpose, as they will prove durable and satisfactory.

This concludes the series of articles on protecting machinery from corrosion, and as many suggestions have been made for the benefit of interested parties, who are already acquainted with the Dixon products, also for those who do not understand their value, it is earnestly hoped that these will be accepted in the same spirit in which they are presented, resulting in substantial benefit to all concerned.

(The End.)

BABBITTING MAIN BEARINGS

A little article which appeared sometime ago in *Power* by Mr. Uriah Jackson, writing from St. Louis, Mo., takes up the matter of babbitting bearings, and how he uses graphite on work of this kind.

I had a job getting out the old metal, as I could raise the shaft only half way out of the bearing on account of the fly-wheel striking the roof, and the metal had to be chipped out of the solid frame.

I had to use long slim chisels and two men, one to hold the point and one to strike, while I bossed the cut. After letting down the shaft and lining up and leveling, I banked the crank and collar with putty and poured fifty-two pounds of metal into it. I then raised the shaft, cleaned the edges, scraped the bearing all I could, and greased it with No. 3 grease and graphite. After lowering the shaft and lining up, I found it was O. K. The bearing has never even warmed up enough to feel it. The old metal was in service nineteen years and I think I have a job that will last just as long.

MR. J. H. LEWIS, MANAGER OF DIXON'S ATLANTA OFFICE

In our January issue we announced the establishment of a Dixon Office in Atlanta, Georgia, of which Mr. J. H. Lewis was made manager. We show below a cut of Mr. Lewis, reproduced from a recent photograph.

As was stated in our announcement, Mr. Lewis was formerly with the Tower Manufacturing and Novelty Company, being the Southern representative for that concern for twenty years.

Those of us who in our happy conceit think of the North as the only section of the country really worth while, will be



rudely awakened if we take time to investigate how the South has grown. For instance, since 1900 the value of Southern manufactured products has doubled itself. The cotton industry has more than doubled itself, and cotton is the second greatest wealth producer in the country. The same increases are recorded in steel and iron products. Along almost every line, the South has made rapid strides just within the last few years.

Our Mr. Lewis is well acquainted with Southern trade conditions, and is popularly known among the stationery trade.

A CONDUCTOR and a brakeman on a Montana railroad differ as to the proper pronunciation of the name Eureka. Passengers are often startled upon arrival at this station to hear the conductor yell:

"You're a liar! You're a liar!"

And then from the brakeman at the other end of the car: "You really are! You really are!"—*Everybody's*.

PROMPT ACTION NEEDED

Danger of a Chewing Gum Famine Must Be Averted

Not only to economists and statesmen, but also to psychologists, physiologists, sociologists, and the great masses of the plain people in general, the reported decay of the chicle forests of Yucatan offers food for profitable speculation. Without chicle there can be no chewing gum, and with the exit of chewing gum there must inevitably arrive a radical change in the daily life and habits of countless human beings. The exact nature of this change, of course, is beyond all possibility of accurate prophecy, but it is certainly not improper to point out that, at its best, it will modify profoundly the whole course of civilization, and that at its worst it may stagger humanity.

Chewing gum, like yellow journalism, the science of aeronautics, and the initiative and referendum, was unknown a century ago, but since then it has won a secure position as a necessity of life. It is, indeed, one of the most important of all agents for combatting that universal wreck of nerves which threatens to engulf every one of us. Human existence in this hysterical twentieth century is not static, but dynamic—not a being, but an eternal and painful becoming. We live at break-neck speed; we crowd a million complex and fatiguing acts into every hour; we are forever upon a non-stop, psychic joy ride. The result is a frightful battering of the nerves, an enormous using up of the emotions, an unbearable running amuck of the faculties. Something is needed—some brake, as it were, or governor—to keep the human machine from rattling itself to pieces.

That something is technically known as an anodyne, or dope, and of all forms of dope, chewing gum is at once the most effective and the least harmful. It furnishes a safe escape-ment for excessive nervous energy; it gives the bones and sinews, from the waist upward, constant and agreeable exercise, and it deadens the intellect without engendering actual imbecility. Nothing else produces so certainly and pleasantly that vacuity of mind necessary in many professions. To the chorus girl, the floorwalker, the Congressman, the motorman, the theatregoer, the diplomat, and the lonely shepherd, it is a pearl beyond price. Without the malleable and inexhaustible gum to occupy them, all of these persons would think indignantly, and thinking would soon drive them to the sanatoria that dot our rural hillsides—broken in body and smashed in mind. The harassed telephone operator, with no gob of benign gum to bite down hard upon, would go crazy twenty times a day. The enslaved Congressman, with no resilient quid to ameliorate the gnashing of his teeth, would soon fall a toothless and doddering prey to Cannonism and gag rule. And the floorwalker, with no gum to entertain him upon his stately but tedious perambulations, would inevitably take to cocaine, knockout drops, or Virginia cut plug.

—*Baltimore Sun.*

IT IS said that a cement that will resist white heat, may be made of pulverized fire-clay four parts, plumbago one part, iron filings or boring free from oxide two parts, peroxide of manganese one part, borax one-half part, and sea-salt one-half part. Mix these to a thick paste, and use immediately, heating gradually when first using.—*Power.*

THE one vital function of a lubricant is the prevention of metallic contact.

Oil or greases, if sufficiently viscous, largely prevent metallic contact, but they demand that conditions be more or less ideal. As conditions vary from the ideal, oil or grease alone becomes less effective in preventing direct contact of the metals.

But Dixon's Flake Graphite absolutely prevents metallic contact under any and all conditions.

You can always know that Dixon's Flake Graphite will do its work well no matter how distracting the circumstances.

Microscopic roughness in metal surfaces is what causes the whole trouble, and Dixon's Flake Graphite attacks this trouble direct.

It fills in the depressions below the normal surface of the metal, and becomes fastened upon the sharp projections above the normal surface. A thin but strong and durable veneer is thus formed on the friction surfaces—friction and wear are reduced and cutting made impossible.

And the important fact to bear in mind is that Flake Graphite is the only lubricant that can successfully perform this service—also that Flake Graphite will always do it.

**Joseph Dixon
Crucible Company,
Jersey City, N. J.**



DIXON'S GRAPHITE ON SHOT GUNS

The letter that follows will be of interest to those who use firearms. It comes to us unsolicited from a captain of the United States Army.

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

DEAR SIR:—

Sometime ago I received your pamphlet "Graphite Afloat and Afield."

It may interest you to know that a little Graphitoleo painted on the end of a reloaded shotgun shell, before crimping, will greatly facilitate that process, and will make a marked improvement in the quality of the crimp, insuring its smoothness and evenness. A very little only is required, put on thinly for about an eighth of an inch up from the end.

A little Graphitoleo or flake graphite touched into the primer seat with a small brush, greatly aids in seating the primers.

Recently I fired 200 rounds with unchilled shot from barrels through which flake graphite No. 635 had been blown, and the graphite was still in the barrels when the gun was cleaned afterward.

There was no trace of leading.

Yours truly,

HER WINTER GARB

Woman likes a contrast
When the weather's rough;
Rather believes
In elbow sleeves
Coupled with a muff.

Woman likes a contrast
When a freeze occurs;
Has a quirk
For open work
Worn with heavy furs.

—*Philadelphia Evening Bulletin.*

SIGNS OF DETERIORATION

When you are satisfied with mediocrity.
When commonness doesn't trouble you.
When you do not feel troubled by a poor day's work, or when a slighted job does not haunt you as it once did.
When you are satisfied to do a thing "just for now," expecting to do it better later.
When you can work untroubled in the midst of confused, systemless surroundings which you might remedy.
When you can listen without a protest to indecent stories.
When your ambition begins to cool, and you no longer demand the same standard of excellence that you once did.
When you do not make a confidante of your mother, as you once did, or are ill at ease with her.
When you begin to think your father is an old fogey.
When you begin to associate with people you would not think of taking to your home, and whom you would not want the members of your family to know that you know.—*Success.*

PENCIL CLUE TO A FORTUNE

It Bore the Name of Trust Company Where Dead Man's Wealth Was Hidden

A few almost undecipherable marks on the stub of a lead pencil constitute the one clue to the whereabouts of what may turn out to be a large fortune left by Capt. Samuel Maxwell Thompson, who died recently at the home of his niece, Mrs. Benjamin Decker, in this city.

The captain in life had frequently bragged about his wealth, but after his death nothing could be found to indicate what he had done with it. Not a scrap of paper could be found to show whether or not any property of the dead man was in existence, and for several days his relatives were in the dark.

Finally, in looking over his uncle's clothing, Mr. Decker found the stub of a pencil in the pocket of an old waistcoat. The letters caught his eye and after some difficulty, he managed to spell out the name of the Nassau Trust Company of New York. He went to New York and learned that the captain had maintained a safe deposit box there. Armed with an order from the Surrogate, Mr. Decker and a representative of the county official will visit the city again next Monday and learn the facts about the dead man's estate. Two keys to the box have since been found.

—*New York Times.*

MINERAL-LUMBER COMPANY,

ARBO, COVINGTON CO., MISS., 11/13/09.

*The Joseph Dixon Crucible Company,
Jersey City, N. J.*

GENTLEMEN:—

About the first of August you very kindly mailed me a sample of Dixon's Graphite Everlasting Axle Grease, which, by the way, was all you claimed for it and more too. Its lubricating qualities are far superior to any axle grease that I have ever used. I also find that it is unaffected by summer weather and will not collect around the hubs of the vehicle, which makes it all the more desirable; in fact it is the only grease that I have ever been able to procure that would not do this in summer.

The sample can sent me has just been used up, and I would like to have you advise me your nearest agency in order that I may purchase some more. I have been unable, so far, to find any in this vicinity. If you have no agency in this section, I would be glad to have you send me a box direct, advising me the cost of same and I will remit promptly.

Yours very truly,

LUMBER-MINERAL COMPANY,
(Signed) ALNEY AUSTIN, Secretary.

MANISTEE, MICH., Dec. 6th, 1909.

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

DEAR SIR:—

I have tried the sample can of waterproof grease for motor boat stuffing box, and on account of its superfine quality it has only been necessary for me to use it twice and I will cheerfully recommend it for the purpose.

Yours truly,

GRAPHITE AS A LUBRICANT FOR GAS ENGINE CYLINDERS

Becoming interested in the above subject and having access to a new six horsepower horizontal engine, using city gas for fuel, I determined to make some experiments. Finding it impossible to mix graphite and oil and feed it through the ordinary lubricator, the experiments were confined to feeding the graphite dry through the air intake and continuing the use of cylinder oil through the lubricator. At first about an ounce of graphite was fed through the air intake at short intervals, but after each charge the engine would show increased internal friction; however, it would quickly pick up and then appear to run smoother than before. The quantity of graphite was reduced and it was found that the best results were obtained when the engine was not given more graphite than could be consumed in the cylinder, or about one-twelfth to one-eighth ounce per horsepower in a ten hour run. This amount should not be fed all at once, but distributed as evenly as possible throughout the ten hours.

The experimenting extended over a period of four months, and during that time the engine was given some severe tests. The spark plug was always in good condition and never missed fire, or became carbonized or short circuited. The cylinder and valves were frequently examined; the latter were in fine condition and the cylinder did not show a sign of a scratch, but had that smooth, dull appearance which indicates the absence of friction. Unfortunately it was impossible to determine the amount of fuel saved by the use of graphite, as the engine was under a constantly varying load.

Desiring to know what others thought of graphite as a cylinder lubricant, I wrote to forty-five prominent gas engine manufacturers, asking if they recommended its use in their engine cylinders. The majority of replies stated that the writers had none, or very little personal experience, and declined to express an opinion. The answers containing advice were interesting, but rather conflicting, and no information could be gained from a reply like this:

"It is not customary with us to use graphite in the engine cylinders, although we sometimes use a little."

The following is a little more explicit:

"The great trouble with graphite is to apply it properly, so as not to plug the rings and make them stick. If properly applied, however, graphite is indeed an ideal method of lubrication, but, of course, must be used with oil."

A prominent firm making high grade auto engines writes:

"We would recommend the use of graphite once in a while in your crank case. Same will do no harm. It has a tendency to close the pores of your cylinder and polish same up so as to increase the compression. It is a good thing."

A large marine gasoline motor manufacturer also says:

"Smear the cylinder walls with it. Once a month is often enough to do this. Of course, in addition the regular amount of oil should be fed through the multiple oiler. Graphite will help to retain a good compression."

Another well known gas engine company writes:

"We use more or less graphite in connection with lubrication, and where properly used much better results can be secured than with lubricating oil alone. If the cylinder has

been allowed to cut slightly because of lack of oil, there is nothing that will put it in shape so quickly as the use of graphite. Where good flake graphite can be mixed with oil and fed to the cylinder, good lubrication is certain."

The manager of a large company making gasoline marine engines, writes:

"We consider graphite the best lubricant in the world for gas engine cylinders. The trouble in using it is in getting it into the cylinder. So far no satisfactory means has been devised. We think so much of the lubricating qualities of graphite in cylinders that we make it a rule thoroughly to coat the inside of every cylinder with it before sending our engines out from the factory. If one of our customers should ask us the question we would tell him to use it by all means if he could get it into the cylinder."

A New York City builder says:

"We think graphite lubrication is very good, provided you have the proper means for furnishing the graphite in the required and constant quality, so that it will reach the parts to be lubricated."—*Power*.

THE SMALLEST ENGINE

Tiny Tim is the name of the smallest engine in the world. It is made of gold and steel, and is so small that a common house fly seems large in comparison. It weighs just four grains complete, which is the weight of an ordinary match. It takes over 100 such engines to weigh one ounce, almost 2,000 to weigh a pound, and more than 3,000,000 to weigh a ton.

The engine bed and stand are of gold. The shaft runs in hardened and ground steel bearings inserted in the gold bed. These bearings are counter-bored from the inside to form a self-oiling bearing. The fly wheel has a steel centre and arms, with a gold rim, and the complete wheel weighs one grain.

The cylinder is of steel, with octagonal base, highly polished. The stroke is 1-32 of an inch; bore, 3-100 of an inch. Seventeen pieces are used in the construction of this engine.

The speed of the engine is 6,000 revolutions a minute. When running 100 a second no motion is visible to the eye, but it makes a noise like the noise of a mosquito. The horsepower is 1-489,000 of one-horsepower.

Compressed air is used to run it; and it may be of interest to note that the amount required to make it hum can easily be borne on the eyeball without winking.—*Answers*.

OLD BUT GOOD

1.—Given the base and rate to find the percentage:

Rule:—Multiply the base by the rate.

2.—Given the percentage and base to find the rate:

Rule:—Divide the percentage by the base.

3.—Given the percentage and rate to find the base:

Rule:—Divide the percentage by the rate.

4.—Given the amount and rate to find the base:

Rule:—Divide the amount by one plus the rate.

5.—Given the difference and rate to find the base:

Rule:—Divide the difference by one minus the rate.

SOME WONDERS OF NEW YORK CITY

Over 250,000 people work at night.

There are 132 department stores, employing over 100,000 people.

There are 112 theaters and two grand opera houses, which will seat about 110,000 people.

About 45,000 marriages are solemnized every year, which makes one in every eleven minutes.

In 1885 New York had only twenty-eight millionaires, at the present time it has over 2,000.

Over 476,000,000 gallons of water are used every day in the greater city.

A child is born every four minutes, and a death occurs every seven minutes.

The city contains 8,000 lawyers, 5,000 actors, 3,000 actresses, 6,000 artists, 10,000 musicians, 15,000 stenographers, 69,000 salesmen and saleswomen, 1,900 farmers, 1,600 undertakers and 852 female barbers.

No. 1 Wall Street is considered the highest-priced property in the United States. Several years ago it sold for \$700 a square foot and is assessed by the city at a little over \$4 a square inch.

The transient hotel population is figured at 250,000 people a day. The hotel properties are valued at over \$80,000,000.

—*Success Magazine.*

DIXON'S FLAKE GRAPHITE ON TOWER CLOCKS

The following letter was received from the superintendent of a clock manufactory and shows how Dixon's Flake Graphite meets all kinds of service conditions.

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

GENTLEMEN:—

Your letter of April 7th received. I received the samples of graphite grease promptly and we have tested them at the factory. For the tower clock dial works it seemed to us the greases were too fluid, and we have cut spiral grooves in the bearings and filled them with your No. 635 graphite or No. 2 flake graphite mixed with lacquer, which sets and holds the graphite in place. All our tests of this combination have worked satisfactory to us. We are using up the samples about the factory, but for general use we use the No. 635 or No. 2 flake and find a small quantity of these mixed with any oil a benefit. We make the sheave pulley that supports our tower clock weights with roller bearings and the recess in the pulley tight so the oil cannot get out except around the shaft, and put a small quantity of the graphite in the roll case of each pulley and expect the benefit of it to last for a long time.

Yours respectfully,

PROFESSOR METCHNIKOFF, the head of the Pasteur Institute, Paris, not satisfied with the millions of microbes we already have, has discovered a new microbe which he has christened the "Proteus." It is found on fruits and vegetables, and in butter and cheese, and is the microbe that causes gastroenteritis in infants.

BACK to nature—use the natural Dixon's Flake Graphite.



THIS IS IT!

Newest Edition (1910)

"Graphite as a Lubricant"

This booklet tells how and why graphite lubricates.

It explains the action of different forms of lubricating graphite.

It gives the results of scientific tests made by the highest authorities in the country.

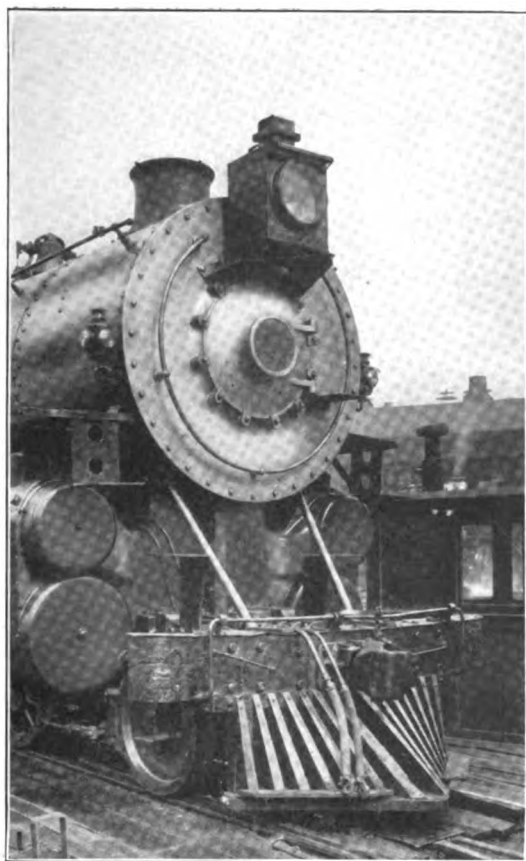
The application of graphite to practically every kind of machinery is treated of, and the methods of application outlined.

It contains more real, meaty, valuable information on the subject of graphite lubrication than any other book of its size.

Write for FREE Copy 190-C.

Joseph Dixon Crucible Co.

Jersey City, N. J.



The Front of this Engine is Protected with Dixon's Graphite Engine Front Finish

DIXON'S GRAPHITE ENGINE FRONT FINISH

The ordinary and usual treatment of locomotive front ends has a number of unsatisfactory features. It requires frequent renewal, which means not only cost of material but also cost of labor. Some of the material used is volatile, and when the engine is running and the front end becomes hot, offensive fumes come back to the cab. In aggravated cases these fumes fill the eyes of the engineer, almost blinding him for the moment, and making it difficult to see the signals.

These and other objectional features are avoided by the use of Dixon's Graphite Engine Front Finish. This Finish lasts from six to nine weeks at each application, and provides not only a durable coating, but one that is also attractive.

The reason why Dixon's Engine Front Finish gives such good results is due to the graphite—its chief ingredient. Graphite is unaffected by heat, that's why this Dixon Finish lasts. It is inert and gives no offensive odors or fumes. It takes a quick polish, but produces a restfully gray finish rather than a dazzling bright one. It offers unusual resistance to the weather and sulphurous gases escaping from the stack. It does not crack, peel, or scale off.

Dixon's Graphite Engine Front Finish gives perfect satisfaction in service. Just recently one of the big railroad systems adopted it for use on their engines.

This Finish is put up in the form of thick paste and is applied as follows:

PREPARATION OF THE SURFACE

First remove all old material on the surface, scale, rust or other foreign substance with steel wire brush and scraper, leaving a good solid surface.

APPLICATION

For first coat, to six pounds of Dixon's Front End Finish add one gallon of Crude Mineral Oil. Then thoroughly mix the whole and apply to the surface with brush, rubbing on thoroughly to fill up pores. The Finish should be applied when there is a moderate heat in the front end.

For the second and other applications, five pounds of the Front End Finish to the gallon of oil will answer. Mix in the same way as above.

Those who apply the Finish should be instructed to touch up spots that may appear later, with a small amount of the Finish, by rubbing it in with a cloth or cotton waste.

By carrying out the above instructions good results will be obtained, and a first-class front end of the locomotive will appear.

A GRUNTING PISTON

Reading the letter by A. K. Vradenburgh on "A Grunting Piston," calls to mind the experience I had but a short time ago with one of my boiler-feed pumps. This pump is of the single-cylinder double-acting type. A short time ago the steam and water cylinders were rebored, new steam and water pistons put in and the steam valve was refaced. After the pump was running again, a grunting noise could be heard in the water cylinder. Thinking that the water-piston packing was too tight, it was loosened up a little, but did not cure the trouble. Then the packing was removed and the piston examined, when it was found that the piston was too tight a fit for the cylinder. There were also sharp edges on the piston, but as there was not time to send the piston to the shop, it was removed from the cylinder and the sharp edges rounded off a little. Then the cylinder walls were given a good coating of graphite mixed with a little engine oil, and the pump was started. The noise could not be heard until a few days after, when the cylinder was given another coating of graphite. This was kept up until the piston had worn to a good fit in the cylinder and no longer made the grunting noise.

Milwaukee, Wis.

H. JAHNKE in *Power*.

A BUSY HOTEL

The arrivals and departures at a prominent hotel in New York City average 600 people daily, and 1500 pieces of baggage are handled each day.

6000 people are fed every day, including Sunday—on the main floor of the building, while 2000 meals are served daily in the bedrooms. This does not include the banquets and private dinners, receptions, weddings, balls, etc.

Its pumping plant is sufficient to supply water to a city of 400,000 inhabitants, and the refrigerating machinery can furnish 150 tons of ice per day. On an average, 100 tons of coal are burned per day.

WAS IT WRITTEN WITH A DIXON PENCIL?

"Your name," he stammered, "is—is written on my heart."

"Yes?" she whispered. "But—but wouldn't it be much nicer if your name were engraved on my stationery?"

—*Inland Stationer*.

A TEST OF PAINT PIGMENTS

Laboratory Tests Compared With Results in Actual Service

The liability to error in making practical application of the results of scientific investigation, is very well shown in the following occurrences. About three years ago there was presented at a meeting of the American Society for Testing Materials, held in Atlantic City, a paper which seemed to show a connection between the pigments used in protective paints and the rate of corrosion of steel (protected by such paints). The indications were based upon experiments made in the following manner:

In wide mouthed bottles partly filled with water, were submerged weighed pieces of polished steel together with equal volumes of pigments, that is, in each bottle was placed a piece of polished steel previously weighed, together with a tablespoon or so of pigment to be tested. The bottles were arranged in train and air was made to pass through by means of tubes, the air passing through the water so that the pigment was constantly agitated. The air was passed through these bottles for a number of days when the pieces of steel were taken out, cleaned and carefully weighed, and the loss was taken as a measure of the rate of corrosion. The difference noted in the cases of the different pigments appeared to be of so much importance that a committee was appointed to investigate the matter.

Five investigators were put on the work and about fifty different pigments were tested out. The results of their work showed that certain pigments grouped themselves into those which seemed to retard corrosion, while others appeared to accelerate it, and others fell into an intermediate division. Those which seemed to retard were termed "inhibitors," and those which increased the rate of corrosion were termed "stimulators," while those not located in either class were called "indeterminates."

A tabulation of the results led to the following basic classification:

Inhibitors	Indeterminates	Stimulators
Zinc lead chromate	White lead (quick process; basic carbonate)	Lampblack
Zinc oxide		Precipitated barium sulphate
Zinc chromate		(blanc fixe)
Zinc barium chromate	Sublimed lead (basic sulphate)	Ochre
Zinc lead, white	Sublimed blue lead	Bright Red Oxide
Prussian blue (inhibitive)	Lithopone	Carbon Black
Chrome green (blue tone)	Orange mineral (American)	Graphite No. 2
White lead (Dutch process)	Red lead	Barium sulphate (barytes)
Ultramarine blue	Litharge	Graphite No. 1
Willow charcoal	Venetian Red	Chinese blue (stimulative Prussian)
	Prince's metallic brown	
	Calcium carbonate (whiting)	
	Calcium carbonate (precipitated)	
	Calcium sulphate	
	China clay	
	Asbestine	
	American vermilion	
	Medium chrome yellow	

Then the Scientific Section of the American Paint Manufacturers' Association took a hand and determined on making a practical test of the matter. So there was erected at Atlantic City a large test fence on which were exposed steel plates, each painted with three coats of paint made from the pigments to be tested. The paints were made of identical composition so far as vehicle was concerned. Three different kinds of steel were used and two plates of each, one plate being pickled and the other untreated, thus making six plates painted with each kind of material.

About forty different pigments were used on this test and the fence was erected in November 1908.

At the beginning of December, 1909, after one year's exposure, the majority of the plates were still in excellent condition, showing no evidence whatever of failure, other than loss of lustre. But there were two notable exceptions.

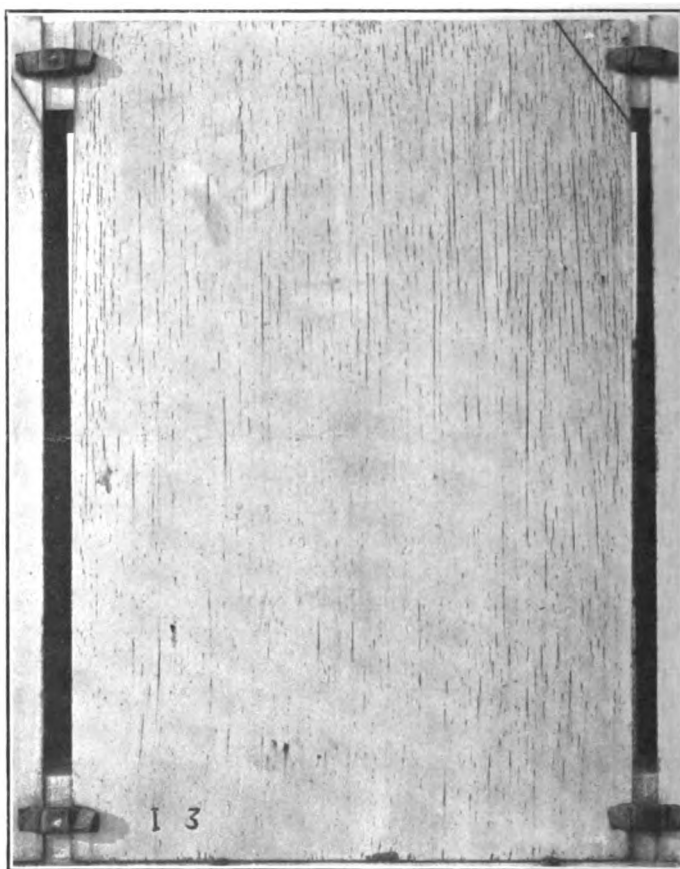


PLATE 1

We give herewith two photographs, Plate No. 1 showing condition of the paint made with oxide of zinc as a pigment, and Plate No. 2 which shows the paint made from whiting, (calcium carbonate), as a pigment. It will be noticed that both of these paints have failed, notwithstanding the fact that the oxide of zinc is placed among the first as an inhibitive pigment and that whiting is grouped as an indeterminate. The condition of the graphite and carbon paint panels is absolutely perfect, not the slightest evidence of decay being observable. We do not present photographs of them here because they would show nothing except dead black surfaces without detail.

Up to the present time only a preliminary report regarding this test has been issued from the Scientific Section of the

American Paint Manufacturers' Association, and that simply states the time is too early for drawing any conclusion.

Up to that point, the investigations have been carried on with an idea only of determining the facts of the matter, and no harm of any kind could have resulted, but early this year a report was issued from the Office of Public Roads of the United States Department of Agriculture, which gives a resumé of the work of the five investigators and touched upon the importance of using in contact with iron only paints in which the pigment was an inhibitive. At about the same time there was issued by the Scientific Section of the American Paint Manufacturers' Association, an article which also referred to the work of this investigating committee but which went further in suggesting for the use of the consumer, a simple method by which he could determine whether the

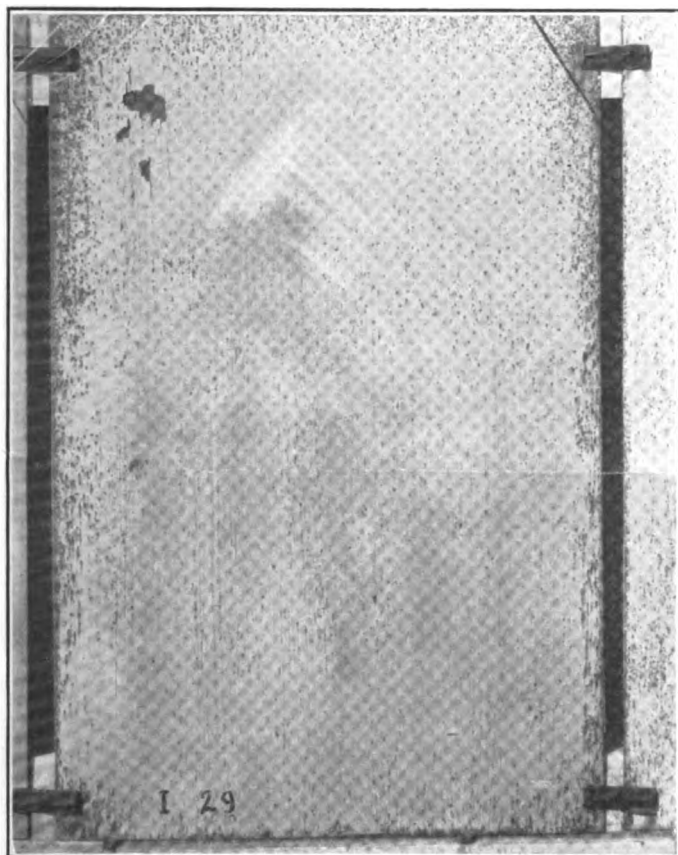


PLATE 2

pigments of paints were inhibitive or stimulators. The report showed how the pigments could be separated from the oils and then by mixing the pigment with water and placed on polished steel knife blades, a fair result could be arrived at.

The results at Atlantic City simply indicate the lack of value of a test made in this way. The testing would not indicate the value of the paint made with different pigments, it only indicates one particular characteristic of the pigment under conditions which would not at all prevail when used as a paint pigment.

Let us suppose, for instance, that a man to whom the matter of color of a paint had no weight, should apply this test for determining for himself what paint he should use where protection of iron was needed, and that it happened that the two particular paints he had chosen for testing were an oxide of

zinc paint and a graphite paint. The result of his test would show to him that the oxide of zinc would make a good paint and would furnish the protection required, while the graphite paint would on the contrary be one to be avoided.

The results of the tests on the Atlantic City fence, show exactly the contrary to be true. The failure of the oxide of zinc paint and the excellent condition of the graphite and carbon paints, simply show that there are other characteristics than this one to be considered in selecting a paint for protective purposes. The most important thing of all is the permanency of the paint film, and that paint which possesses this in the highest degree, will universally be the most satisfactory and economical paint to apply.

The photograph which we present shows only one plate, of course, but the conditions of the other five plates covered with the same material are almost identical, showing that the failure is not peculiar to any one of the six plates. Out of the forty or fifty paints applied up to the present time, only four or five may be said to have failed. The great majority of plates show absolutely no indication of failure, as was mentioned before.

It shall be our purpose to keep in close touch with this matter, and as fast as information concerning it is available, we shall present it.

FROM OUR CREDIT DEPARTMENT

We give herewith a copy of a letter just received from a customer whose attention we called to a bill which was past due.

Gants

I am sorry for I ower luckt the Bill
der for dit not send the Ccheck.

Yurs truly,

CAROLYN WELLS, writer of clever things, had in a recent issue of *Harper's Magazine*, some take-offs on the celebrated verse about the little girl with a curl in the middle of her forehead who was sometimes very good and sometimes very horrid. This little verse, which we believe has been attributed to Longfellow, was rewritten in styles that would be used by other poets, such as Browning, Poe, Stevenson, etc. All of these were very cleverly done, but we have not space to reproduce them. However, we do reprint below the revision of this verse according to the style of Kipling's *Files-On-Parade*:

"What is the gas-stove going for?"

Asked Files-On-Parade.

"To curl my hair, to curl my hair,"

His little sister said.

"What makes you curl so tight, so tight?"

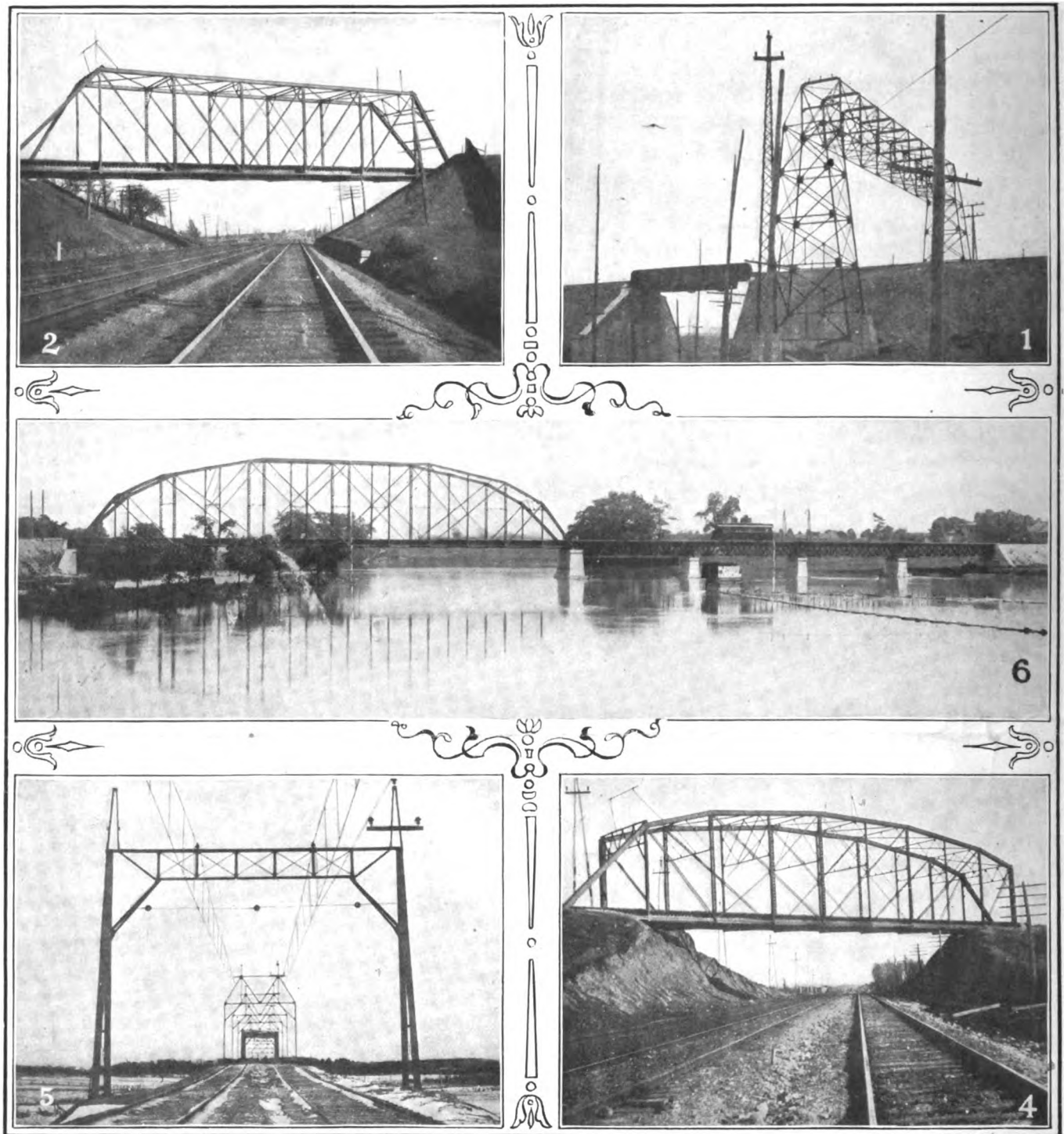
Asked Files-On-Parade.

"I'm thinkin' 'twill be damp to night,"

His Little Sister said.

"For you know that when I'm good, I'm just as good as I can be.

And when I'm bad, there's nobody can be as bad as me.
So I'm thinkin' I'll be very good to-night, because, you see,
I'm thinkin' I'll be horrid in the morning."



Structures Belonging to the Rochester, Syracuse & Eastern Electric R. R.
All Protected with Dixon's Silica-Graphite Paint.

1. High Tension Bridge carrying Wires over West Shore R. R. 2. 180 Foot Span over New York Central Tracks. 4. Span over West Shore Tracks. 5. Steel Catenary Bridges, 300 feet apart; there are 37 miles of this construction. 6. Bridge over New Barge Canal and Oswego River.

GRAPHITE

VOL. XII.

MARCH, 1910.

No. 3.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

CONCERNING GRAPHITE LUBRICATION

What an Oldtimer Remembers

John R. Godfrey, writing in the *American Machinist*, says:

Speaking of lubrication recalls the extremely woozy ideas too many of us have as to just what lubrication is. We talk about viscosity, often without realizing that it is a quality we could well dispense with if it wasn't for the need of some "body" in the oil to keep the bearing surfaces apart.

I remember in the earlier days of graphite as a lubricant, a mixture of wood pulp and graphite was used quite extensively for bearings of various kinds, being molded into the proper shape and run with little or no oil.

A striking example was a large rat-tail file with a pulley in the center and running in a graphite bearing at each end. It, of course, cut out enough graphite to fill the teeth solid full, making it a shaft of graphite so far as the bearing surface was concerned, and it then ran as smoothly as possible where the shaft is appreciably smaller than the hole. This shows in an exaggerated form what takes place in any bearing. The lubricant fills in the hollows and is carried around with the shaft as was the graphite in the file teeth. A lubricant which can fill in these hollows and round them out, yet not retard the motion of the shaft by its viscosity or stickiness, seems to be what is needed.

An oil expert tells of a large mill where the load was almost up to the maximum for the engine. A new oil was tried and the stickiness, the tenacity with which the particles hung together, was enough to stall the engine. Sounds a bit fishy, of course, but it was the last straw that broke the camel's back, so why not the last drop of oil? It goes to show that the oil we pour into a bearing may make it run harder than before; no one would expect to have a shaft run easily with honey or molasses in the bearing, and yet some oils can show a close second so far as stickiness is concerned.

Our graphite friends contend that the only real eighteen carat lubrication is to use graphite to fill the hollows in the shaft and its bearing and so present a solid, nonviscous surface that couldn't stick if it wanted to.

Some even go so far as to predict that the use of graphite, or some solid lubricant, will eventually replace oil entirely,

and that it will be fed to the bearings by some medium such as water, to be deposited there while the water passes on, carrying away any heat and having performed its mission.

SOME THOUGHTS ABOUT PENCILS

By EDMOND ST. JOHN

From the Stylus of India to the American Graphite Eldorado pencil is a far call of several thousand years, yet in one man's life time the pencil has acquired a wider range of distribution and utility than any one product of the white man's civilization, except cotton, and will in a short time be used by more human beings than any other article of commerce; this too, under an entire misconception as to its real character, being commonly known as lead pencil, while it has no lead in it, and is a near relative in its make-up of the diamond, being in its carbon only another form of that beautiful product of nature.

From start to finish the pencil is a mystic. Transmitting its life in black on white into thoughts and inspirations, it is closer in touch with "human feelings," more responsive, more useful than any other inanimate thing. The diamond flashes its soul through fifty-seven optical centers, the pencil had man's thinking pressed into its being by fifty-seven separate scientific, mechanical and artistic operations, so that its responsiveness would enable your impression to become a valuable and beautiful expression. Over its fine, smooth, flexible, yet tenacious point flows the wide range of "human feeling," touching the vast field of interest, responsibility and sentiment, until its equation partakes of your own personality, even to the way you have sharpened its point, and your favorite pencil becomes a necessity.

As the pencil is to mysticism, so is your selection to your character, and he who reads your pencil may read your character. Because you put your character into your selection. There are at least five thousand five hundred and fifty-seven kinds of pencils, there are less than fifty-seven qualities of pencils, probably not seven of clear type individuals of quality.

In selecting an Eldorado, you have an individual of quality.
—Inland Stationer.

INDICATION OF PROSPERITY

There is no longer an appearance of a hand to mouth system of ordering goods. Orders coming in now are of a size that indicate firms are stocking up.

1907 was the best year in the history of the Dixon Company, but 1910 so far is showing a larger volume of business than 1907.



ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

OFFICERS:

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Vice Pres. & Counsel—WILLIAM H. CORBIN
Treasurer—GEORGE E. LONG
Secretary—HARRY DAILEY
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GEORGE E. LONG	EDWARD L. YOUNG
WILLIAM MURRAY	HARRY DAILEY
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 PITTSBURG OFFICE, Wabash Terminal Building.
 ST. LOUIS OFFICE, 501 Victoria Building.
 WASHINGTON, D. C., OFFICE, 1410 H Street, N. W.
 BALTIMORE OFFICE, 1005 Union Trust Building.
 BUFFALO OFFICE, 72 Erie County Savings Bank Building.
 ATLANTA OFFICE, Fourth National Bank Building.

CONFIDENCE

The basis of almost every relationship that exists among men is confidence. It is as vital to business as it is to social relations. Confidence may be considered as one of the fundamental elements without which life would lose much of its sweetness.

In this connection, the Curtis Publishing Company brought out an interesting consideration. In telling how essential confidence was to buying, it pointed out that not one man in ten (and it might have said a hundred) could tell pure wool or a genuine diamond. When a man wants to get an all wool piece of cloth, he goes to the tailor or the merchant in whom he has confidence. He tells his merchant what he wants and he knows he will get what he asks for. In buying a diamond, he goes to the jeweler whose reputation is beyond reproach. He can depend upon the jeweler's selling him a genuine article

at a consistent price. "Caveat emptor" is no longer a slogan in modern merchandizing.

Business confidence itself is based on the elements of time, experience, reputation, general methods and reasonableness of claims. Time is placed first because it is the test tube in which the other elements are tried. Experience lends skill and facility, it is an intellectual rather than a moral attribute, but it is necessary to the ideal whole. Reputation, if it has endured, is generally valuable. We are all familiar with the copy book maxim that truth crushed to the earth will rise again, which merely means that we may be able to act falsely and deceitfully for a time, but that it is impossible to maintain this attitude constantly without discovery. General methods refer to a concern's way of doing business, whether it is frankly and pleasantly conducted or whether there seems to be an undertow of friction and concealment. Reasonableness of claims is a deciding factor in the establishment of confidence. To claim the improbable, is immediately to beget suspicion. Further, it suggests that since one is careless in his statements, the carelessness may extend further to the detriment of the product.

This little attempt to emphasize and analyze confidence is in behalf of Dixon's Flake Graphite. We have established deserved confidence in Dixon's Flake Graphite and every element comprising confidence has played its part. This company was the pioneer in the development of graphite. It first took up the work a quarter of a century ago. It is due almost entirely to the Dixon Company's working alone that the present status of lubricating graphite has been established.

When you buy Dixon's Flake Graphite, you have the assurance of a reliable, dependable product. The mines at Ticonderoga, which are owned and operated by this company, probably produce the very finest lubricating graphite in the world. When you buy Dixon's Flake Graphite, there occurs no question in your mind as to whether it will do the work. Another graphite may or may not be safe to use, but Dixon's Flake Graphite passed through all experimental stages years and years ago. The Dixon name is behind this graphite—it has won confidence by being worthy of it.

"IF YOU WANT A THING TO APPEAR IN YOUR NATIONAL LIFE, PLACE IT IN YOUR SCHOOL SYSTEM"

Dixon's American Graphite Pencils are a part of the school system of all prominent cities and towns in the United States. There are schools that have used them for thirty years in spite of strong competition, and these schools stand at the head of their profession.

Delightful task! to rear the tender thought,
 To teach the young idea how to shoot,
 To bring the Dixon pencil to his mind,
 To breathe the enlivening spirit, and to fix
 The generous purpose in the glowing breast.

—THOMSON PARODIED.

POLISHING valves and valve seats with flake graphite largely prevents burning and pitting, and obviates leaking and loss of compression.

"GRAPHITE AS A LUBRICANT"

The More One Learns About Graphite the Wider Use One Finds For It

The above, as many of our readers may know, is the title of a publication on the subject of graphite lubrication which is published and sent out by the Joseph Dixon Crucible Company. It is a publication that librarians of public libraries and librarians of technical schools and colleges have not hesitated to ask for, as they have considered it well worthy of a place on their shelves.

We have had many pleasant letters relative to this little publication, of which the following from a gentleman in Pottstown, Pa., is a fair sample.

"'Graphite as a Lubricant' at hand, and studied from cover to cover. The more I learn about graphite the wider use I find for it. I thank you cordially for the booklet, and if I get into any lubricating trouble and need aid, I will certainly hunt you up."

REGULATING THE SPEED OF STEAM ENGINES

By W. H. WAKEMAN

Part I

A certain steam engineer was asked by the chairman of an examining committee to explain the methods by which the speed of throttling and automatic engines is regulated. Although he was an intelligent man, he could give no explanation of the operation of regulating the speed of throttling engines, but said that automatic engines were regulated "by a spring." Inasmuch as there are hundreds of automatic engines in service in which no spring is used for this purpose, it is quite plain that this young engineer had much to learn along this line, and as many others are not better informed on this subject, a clear explanation of the principles involved cannot fail to be both interesting and instructive.

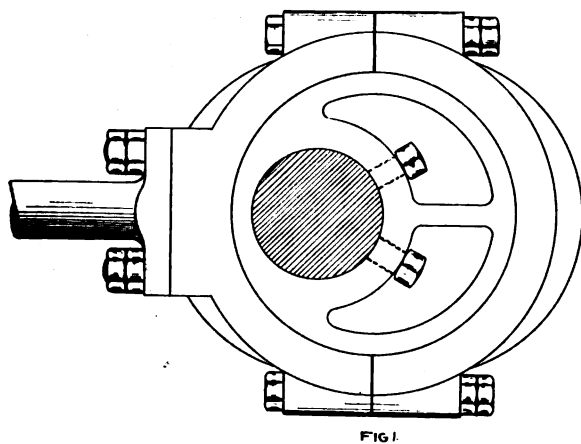


FIG. 1.

Fig. 1 illustrates the crank shaft of a throttling engine in section lines, on which there is an ordinary eccentric held in place by two set screws. Suppose that it is two inches from the center of this shaft to the center of the eccentric, and the rod is connected directly to the plain D slide valve which admits steam to the cylinder. Under these conditions the valve will travel four inches for each revolution of the fly wheel, and as this is a fixed movement for all conditions of service, it is

plain that it has nothing whatever to do with regulating the speed, because any device that is effective for this purpose must necessarily change its operation to meet variations in the load which are constantly in evidence.

Eccentrics are made of cast iron, and the straps which encircle them are composed of the same material, hence when this device is in operation there are two cast iron surfaces rubbing together, and while this makes a very durable bearing, it must be well lubricated, or else it will be quickly destroyed without remedy. Naturally there is excessive friction at this point, as the following statement demonstrates. If this eccentric is fifteen inches in diameter it is nearly four feet in circumference, therefore if the engine revolves 100 times per minute, about 400 feet in length will pass a given point on one of the straps, as this point is practically stationary so far as this idea is concerned. If these surfaces are properly treated with Dixon's Flake Graphite, the minute low spots will be filled with it until perfect contact is secured at all points, thus reducing friction to a minimum, and removing all danger of scoring, provided the alignment is perfect.

This is a very conservative view of common conditions, because many engines are run at double the speed above mentioned, and even a still higher rate is not difficult to find in practise. If clear oil is used for this purpose, and the supply is not absolutely continuous, trouble is sure to follow.

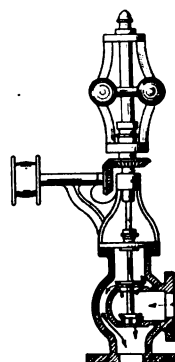


FIG. 2.

Fig. 2 is a governor used extensively on throttling engines. Steam is passing through the balanced valve as indicated by arrows. This valve is now in about the middle of its travel, indicating that a medium load is on. If this is increased, the speed of the crank shaft is slightly reduced, and the fly balls revolve slower accordingly. This action causes the valve to be opened wider, hence more steam is admitted and the greater load is carried with a very slight reduction of speed.

Suppose that nearly all of the load is thrown off suddenly. The speed is instantly increased to a very slight extent, causing the fly balls to be thrown outward, and this action nearly closes the balanced valve, consequently but little steam is admitted, although it is enough to carry the lighter load.

This action is continued indefinitely, and while the change from one extreme to the other is made, the speed will not vary more than four or five revolutions for each 100 made by the crank shaft, provided the heavy load does not exceed the capacity of the engine.

Unless the governor is kept in good order, the speed will vary much more than the foregoing statement indicates, for although the valve is practically balanced, resulting in nearly frictionless movement, it is quite possible to create unnecessary friction in the stuffing box which is just above the valve. This must be packed to hold against pressure realized in the steam chest, which is a variable quantity as above explained, hence while tight under a light pressure, it may leak when this is increased. Under these conditions, it is very natural for an engineer to seize the most convenient wrench and tighten the nut. If the packing is hard and unyielding, the leak may not be stopped until excessive friction prevents free movement of

the valve stem, hence great and even dangerous increase of speed may result, or perhaps it will be reduced until it is too low for the regular service.

To prevent this, it is necessary to keep the valve stem in good order, for if it is worn or scored, it should be turned down until it is true again, and the stuffing box bushed accordingly. If worn too much, it ought to be replaced by a new one. Fibrous packing that will stand a high temperature without charring is required for this service, and if it is covered with Dixon's Flake Graphite mixed with cylinder oil, it will be greatly improved. Where it comes in contact with the valve stem the packing presents a glazed surface which allows the stem to move freely. This coating also prevents the packing from sticking to the stuffing box, hence it comes out easily when it must be renewed. As such work is usually done at night or on Sunday, anything that will shorten it is beneficial to the engineer, also his employer. Furthermore, if an engineer finds it possible to complete such a job in ten minutes, he is less liable to postpone it than where it takes an hour to dig burnt packing out of a hot and narrow stuffing box.

While there are several styles of throttling governors in general use, the principle above described is applied in all of them, although outward forms differ widely.

(To be Continued)

"DIXON'S FLAKE MICA"

A Warning

For many years we have been endeavoring to make the name "Dixon's" synonymous with all that is best in lubrication, and the reputation our lubricants have acquired attests the success of our efforts in that direction. Occasionally others have sought to take advantage of the reputation of Dixon's lubricants to sell preparations for which we are not responsible, and in such cases we have been compelled to take action to protect our customers and our good will.

Recently the Royal Mica Lubrant Company, of Buffalo, N. Y., put on the market a lubricant made of mica which they attempted to sell under the name "Dixon's Flake Mica." Protest proving unavailing, we were compelled to institute suit in the United States Circuit Court in Buffalo. The case was completed last month, when the Court entered a decree protecting us against the misuse of the name as follows:

At a stated Term of the Circuit Court of the United States for the Western District of New York, in the Second Circuit, held at the United States Court House and Post Office Building, in the City of Buffalo, in said District, on the 5th day of January, 1910.

PRESENT: HON. JOHN R. HAZEL,
District Judge holding Circuit Court.

Joseph Dixon Crucible Company, Complainant,

vs.

Edward L. Miller and James Q. Dixon, Defendants.

This cause having come on to be heard upon the bill, answer, replication and proofs, at final hearing, and the Court having heard Archibald Cox, Esq., on behalf of the complainant, and Philip V. Fennelly, Esq., on behalf of the defendants, and due deliberation having been had, it is—

ORDERED, ADJUDGED AND DECREED, and the Court doth hereby Order, Adjudge and Decree, that an injunction issue herein perpetually enjoining and restraining the defendants, Edward L. Miller and James Q. Dixon, and each of them, their and each of their clerks, attorneys, agents, servants and workmen, and all claiming or holding through or under them, or either of them, from making use by means of labels, advertisements, publications, or by word of mouth, or otherwise, in connection with the manufacture or sale or offering for sale or disposing of any lubricant not by or for the complainant made of either of the following:

(a) The name "Dixon's" or "Dixon" (with or without other names or initials) as a name of a lubricant or in such collocation with words descriptive of a lubricant as to indicate that such is a variety of "Dixon's" lubricants.

(b) The word "Dixon's" or "Dixon" (with or without other names or initials) unless accompanied by a fair statement embraced in the same paragraph, printed in the same sized type, that the article is not the product of the Joseph Dixon Crucible Company.

Nothing herein contained shall be construed to prevent the defendants from using the name of the defendant, James Q. Dixon, in connection with a lubricant prepared by or for him, provided such use is within the limitations above prescribed.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED, that the complainant do recover of the defendants its costs herein to be taxed.

TABLE BEVERAGES IN EUROPE

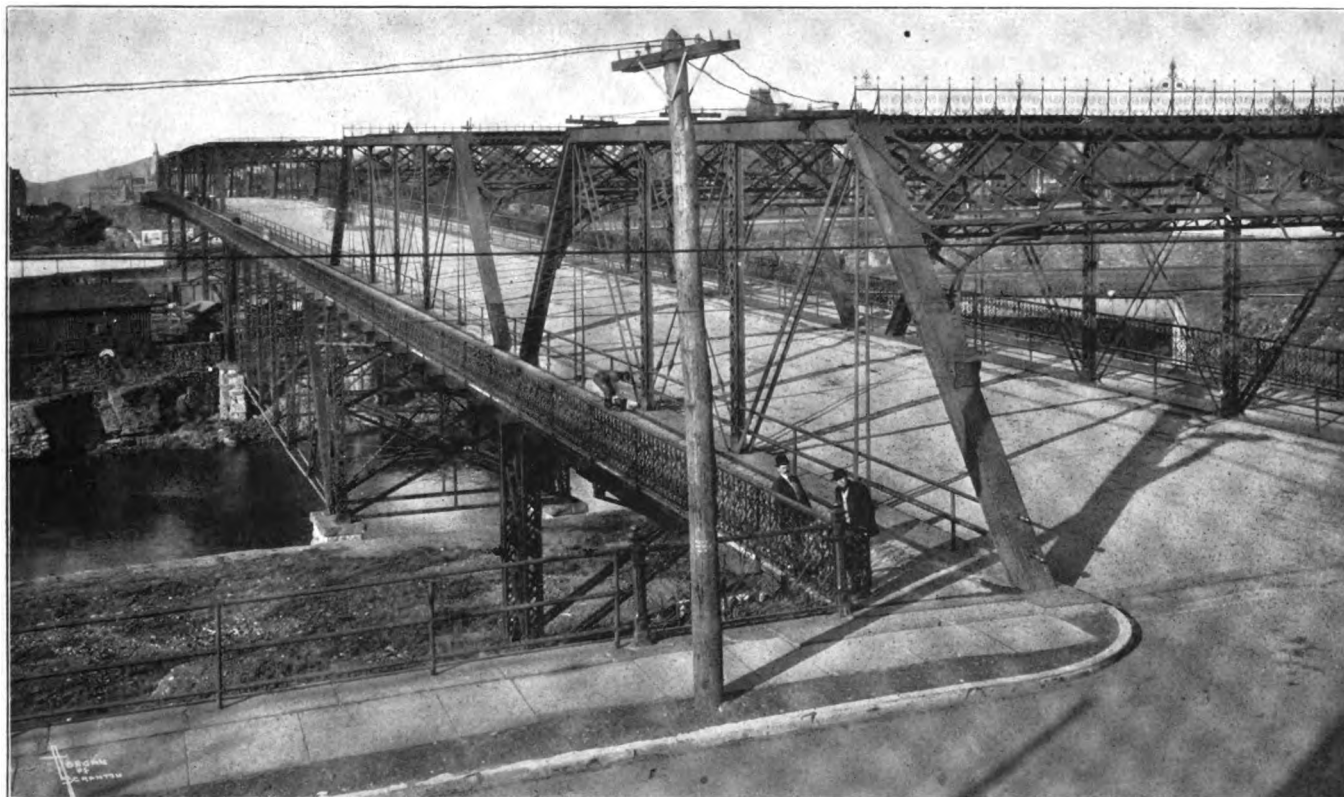
In France they drink coffee, chocolate and chicory principally; they do not care for coffee substitutes.

In Russia tea is the general drink of the people, not only because it has been established for decades as a national beverage, but because it is comparatively cheap and appears to supply the wants of the individual. Coffee, chocolate, cocoa and coffee substitutes, are used only by the richer classes which compose the minority of the population.

In Switzerland coffee drinking is general among all classes of people. This is especially true of the working classes who drink coffee for "breakfast," again at ten o'clock in the morning, for dinner, as an afternoon refreshment, and many of them for supper, which makes the consumption of coffee very large in proportion to the population. The consumption of tea is not large as compared with coffee, the majority of the people do not drink tea. While chocolate is consumed in large quantities in Switzerland, it is not much used as a beverage, the most of it being used as food. Chicory is imported into Switzerland and used for flavoring coffee. Practically all of it comes from Belgium.

SPRING LUBRICATION

Last winter when overhauling his car, the writer decided to try and improve the spring action and stop a squeaking in them. The springs were taken off and the leaves separated by wedging or disassembling. All rust was then removed with kerosene and emery cloth and the springs were put back after a liberal coating of grease and flake graphite had been applied to the leaves. The result was an easier spring with no squeaking.—*Horseless Age*.



SPRUCE STREET BRIDGE OF SCRANTON, PA.

Painted Over Two Years Ago With Two Coats of Dixon's Silica-Graphite Paint. Structure is Reported to be in Excellent Condition and Good for Several Years More

TOBACCO AND LIQUOR

What an Old Time Safe Blower Thinks of Them

In his day there was none among the well-known safe blowers whom the police feared more than "Liverpool Jack," now a grizzly old man turned seventy, and known to his friends as John James Murphy.

The other 'day while he was waiting at police headquarters, Inspector McCafferty took a cigar from his pocket and held it out to the old man, who said:

"No, thanks. I don't smoke. Never have. Never drank. Can't drink and smoke and do good work."

And old Murphy, pal of Shang Draper, the Hopes, and Red Leary, the embodiment of a weird code of ethics, chuckled at his little joke. But he had told the truth, he had never drunk liquor nor used tobacco.

"A successful man in his way," was the comment of Inspector McCafferty, as the old fellow was being taken out of Headquarters to be arraigned in the Court of General Sessions.

A PUBLICITY THAT MONEY CANNOT BUY

Dixon's Graphite Products possess that quality which no money can buy; that is, public commendation, recommendation from friend to friend, man to man, woman to woman, child to child, and from one user to another user.

The housewife recommends Dixon's Carburet of Iron Stove Polish, which has been on the market for nearly one hundred years, and which has been used from grandmother down to grandchild.

The man, if he is a mechanic, recommends without hesitation

Dixon's Graphite Lubricants; he knows from experience what they are, he knows that they save wear to the machinery and wear to the nerves of the man who runs the machinery.

If a man is a painter and desires to recommend the best protective paint for iron work or for any exposed work, he recommends Dixon's Silica-Graphite Paint.

The school boy or the school girl recommends Dixon's American Graphite Pencils as being the most uniform and toughest pencils made.

It may be of some passing interest to our readers to know that there is no industry on the face of the earth that doesn't make use of Dixon's Graphite Products. Probably nothing outside of iron itself is in such general use.

The success of Dixon's Graphite Products has been built upon only one foundation—exceptional merit.

WHY AUTOS FRIGHTEN HORSES

This bit of brightness is said to have cropped out in a conversation between two Lawrence misses not old enough to go to school, says the *Kansas City Journal*.

"What makes a horse act naughty when he sees an auto?"

"It is this way: Horses is used to seein' other horses pull wagons, and they don't know what to think of 'em goin' along without a horse. Guess if you saw a pair of pants walkin' down the street without a man in 'em you'd be scared too."

—Our Animal Friends.

IT IS better to buy Dixon's Flake Graphite than to wish you had.

AN EXPERIENCE OF FORTY YEARS

Enables a Successful Man to Tell What Constitutes a Good Salesman. The Cheap Man Does Not Last

Geyer's Stationer, of New York City, has a very interesting article by Mr. Ed. E. Huber of Eberhard Faber, in which Mr. Huber says any salesman can sell goods if permitted to cut the price, but it takes a clever salesman to sell goods at the price his house places on such articles.

A good salesman is one who sells goods on a profitable basis, with whom a volume of sales is not the sole object, but whose business is always taken at a profit.

Salesmen frequently weaken their own position and place the concern they travel for in an embarrassing position by referring offers to the home offices.

If every salesman should stand by his firm and sell goods at the prices that have been established, he will have the respect of his customers to a greater extent than if he accepts the suggestion to refer the offer to his home office. The buyer will then know that he is dealing with a man who understands his business and who is fairly representing his firm, and that in quoting a price it is the best his firm will make.

Business is built up by customers who have confidence in the concerns they deal with, who send in their orders without asking any questions, knowing that when the order is received it will be billed at the best prevailing price. Such customers fill our mail baskets with orders unsolicited by salesmen, and are what I consider the good-will of a business.

The product of any business concern who make or sell goods of merit, and place upon such quality goods a fair price that is profitable to the manufacturer, can be sold at a profit by the dealer.

There are always customers who are looking for something cheap, and many years ago I impressed upon our salesmen that there are only two concerns in the manufacturing business

that are much talked about in the trade, one is the concern that makes high quality goods and is possibly higher in price, and the other is the one who makes the cheapest class of goods and asks the cheapest price.

In my experience I have found that the concern making goods in which the quality is considered is still in business, whereas those who sell cheap goods either fail or get out of business because they do not make sufficient profits.

The cheap man does not last. This applies to the manufacturer, the jobber and the retailer. Goods manufactured with the object of "quality" and a correspondingly fair profitable price, stand at the top and are bound to remain on the market.

"A CARLOAD OF PENCILS"

Our cup of joy was filled to overflowing for a moment, when we read a letter received from the traffic agent of a Southern railroad, in which he said that a representative of his road had been advised that the salesman of the Dixon Company had completed sales for a carload of pencils and his road would be very glad to have the privilege of handling the freight. Unfortunately, while that rumor was pleasant to contemplate and think of and to hope for in the future, it was not founded on fact.

As we have already advised our readers, the Dixon Company has opened a branch office at Atlanta, Ga., with the expectation of more frequently seeing our Southern trade with the hope of adding largely to it and of making many additions to our host of Southern friends. It may be that that office will later on be able to send in orders for a carload of lead pencils.

You can pay more, but you cannot buy more (if you get Dixon's.)



Durable Lumber Crayons

This means not only crayons that last unusually long, but also crayon marks that successfully withstand the weather and all erasive influences—such are Dixon's Lumber Crayons. Be assured you cannot get better crayons than Dixon's and it is possible that some others may not be so good.

JOSEPH DIXON CRUCIBLE CO.

JERSEY CITY, N. J.



WHAT ADVERTISING DOES

It Creates Business, Increases Sales, and Attaches to a Given Name the Idea of a Definite Product. Advertising Stimulates and Maintains

Think of the leading products in any line, and ninety-nine times out of a hundred you find advertised products. We might go on to point a moral in this, but believe that the mere statement of the fact will carry its own significance. No doubt there are other products of the same kind which are in many cases just as good, but the point is, *we do not know it*.

Sometime back there appeared in a little house organ, "Thru the Meshes," an item concerning one Peter Treeter. Peter is described as a backwoods Sandow, but confines his feats to less spectacular work and within a very narrow circle. As a result, the name Treeter does not stand for anything to the average individual. He may be twice as strong as Sandow, but this fact has no monetary value to him. The difference is we all know Sandow; we do not know Treeter.

Advertising is primarily intended as a sales force. It is used to stimulate greater demand or, in a more conservative way, to maintain an established demand. There must be in the business world more or less change. Practically every concern will lose and gain more or less customers during the course of the year. The unadvertised product has the same natural forces working against it that the advertised product has, but it does not have the creative forces working for it. As a result there is greater chance that it may lose more trade than it gains in a period of years, while the advertised product of equal value is more likely to gain more than it loses.

Advertising, like all intangible manifestations, cannot be weighed and measured. It is largely a matter of intelligent faith. There are, however, many evidences of the value of advertising, and if you will sit down with yourself and weigh these carefully, you will see the power that advertising exercises. For instance, some businesses have been built up and maintained through no other agency than the printed word. The big mail order houses of Chicago are monuments to the power of advertising, and they are immense monuments. It has been stated that the business of Sears, Roebuck & Company runs in the neighborhood of fifty millions a year. In the breakfast food business a demand was absolutely created by advertising. The public did not know it wanted breakfast food until the advertisers made them believe it. On the other hand, the older ones of us may recall concerns whose discontinuance of advertising has meant the dropping of a big proportion of their business, or its entire cessation. If you are an advertiser, and desire to abide by the consequences of your test, stop advertising for a year or two and see if it shows in your sales sheets.

In its broadest aspect advertising is an investment in good will and reputation. It becomes a business asset creating for a name or a product a definite value in the public mind. The name "Waterman," for instance, stands for a fountain pen of known and recognized value. At the beginning, the name "Waterman's Pen" conveyed nothing more than the name "Smith's Pen" would now, but in the course of time constant appearance of the "Waterman" advertising made the public familiar with it until they felt that from a buyer's

standpoint they had a trade acquaintance with it. "Smith" might put a pen on the market today and in every way equal a "Waterman's," but think what a tremendous force he would have to contend with in the way of prestige and knowledge and confidence that the "Waterman" advertising has generated.

It has been stated in this connection, that a million dollars and more has been offered to the owners for permission to use the word "Royal" in connection with baking powder, and "Mennen's" in connection with toilet powder. Understand, this was for no tangible asset, but merely for the right to use the name. Recently two publishing properties have changed hands. One was a general magazine, well known to the public; the other was a trade magazine, just as well known in the field it occupied. In each instance the price secured for this property was probably three or four times what the actual property was worth in the way of tangible assets. The rest of the purchase price went to pay for good will. Good will is just as intangible as advertising—and it has just as much recognition in the business world. Good will and advertising are very closely related, since the latter is an immense help in securing the former.

Off-hand the skeptic is apt to remark: "Of what value is advertising; nobody believes it." There is a certain proportion of truth in this statement, but as time goes on and the advertiser still continues in business and still continues to advertise, a certain cumulative effect results from the advertising, leaving its impress just as the constant dropping of water wears away stone. We all know that it costs money to advertise, and the fact that the maker is able to continue to pay for advertising from his profits, proves that his goods are meeting with a certain continued sale. Given a continued sale we naturally deduce merit, and therefore we come logically to the conclusion that a constant advertiser is the maker of a meritorious product—a reputation worth having.

DID NOT TAKE SO MUCH OF DIXON'S AXLE GREASE

One of the Dixon representatives in the Southern District reports a little episode involving Dixon's Graphite Axle Grease. On making a second call on a customer whom he had formerly sold, our salesman inquired what satisfaction our axle grease was giving, whereupon the customer went on to relate how he had called down one of his draymen (a darkey) for not greasing the axles as frequently as had been the practise, whereupon the driver replied: "Golly, boss, only need to put dat grease on once a week." The customer was still skeptical, but after an investigation found his drayman's report to be true.

DIXON'S HOUSE ORGAN PLEASES

A well known electric company of Birmingham, England, writes us as follows:

"About twelve months ago you very kindly sent us a copy of your publication GRAPHITE, with which we were very much pleased. Since then we have been hoping to receive your further favors, and we shall be glad to forward the annual subscription for this most interesting and useful paper."

DIXON's Flake Graphite eventually, why not now?

EXPANDING THE MARKET

Geographically speaking, the United States is only one eighth part of the civilized world. Seven eighths of the civilized world is represented by the foreign markets. In other words, the markets for the products of American manufacturers will be found in export markets.

When the American manufacturer is able to make goods at as low a cost as his foreign competitor, there is a possibility of a market eight times as great as he already has.

When the American manufacturer reaches the point where he can create no larger demand for his goods in the United States, he must then look to the foreign markets, not only as an outlet for his goods, but as a means for lowering his cost of production.

THE BIRD ON NELLIE'S HAT

In a recent article in *Everybody's Magazine*, the war being made on birds is considered. The hunter of the bird who kills for its plumes or feathers is very harshly dealt with. In fact, the writer of the article states that "robbing henroosts grades as a respectable occupation compared with plume-hunting."

Ask any woman of your acquaintance what she thinks of hunting birds for their plumage, and have your pains for your trouble—or worse. The interesting feature about this affair is that everyone refuses responsibility for it. The article in *Everybody's* very cleverly takes up this point and paraphrases the old nursery favorite, "Who Killed Cock Robin."

"Not I," said the Plumer,
"It's nothing but rumor."

"Not I," said the Bird-man,
"I'm half-brother to Pan."

"Not I," said the Seller,
"It's some brutal feller."

"Not I," said the Hatter,
"See Paris in matter."

"Not I, said the Cat,
"Would I ever do that?"

"Not I,"—the Collector,
"I'm partly Protector."

"Not I," said the Dame,
"Twas dead when it came."

The matter is marvelously simple; nobody's responsible.

DON'T MARRY A MAN UNTIL YOU HAVE SEEN HIM SHARPEN A PENCIL

The following appeared in *GRAPHITE* for May, 1903; we think it will bear repeating.

Don't marry a man till you have seen him sharpen a pencil. You can tell by the way he does that, whether he is suited to you or not. Here are a few infallible rules for your guidance in the matter:

The man who holds the point towards him and close up against his shirt front is slow and likes to have secrets. He is

the kind of man who, when his best girl finds out that there are "others," and asks him who they are and what he means by calling on them, will assume an air of exceeding dignity and put her off with some evasive answer which says quite plainly, "Yes, I called, but it's none of your business who she is or why I did it." A woman with a jealous disposition should look out for the man who sharpens his pencil in this manner and shun him.

The man who holds the pencil out and whittles away, careless of results, is an impulsive fellow, joily, good natured and generous.

He who leaves a blunt point is dull and plodding, and will never amount to much. He is really a good-hearted fellow, and hasn't an enemy in the world. He finds his chief pleasure in the commonplace things of life.

On the other hand, he who sharpens his pencil an inch or more from the point, is high strung and imaginative and subject to exuberant flights of fancy. He will always be seeking to mount upward and accomplish things in the higher regions of business and arts, and his wife's greatest trouble will be to hold him down to earth and prevent his flying off altogether on a tangent.

The man who sharpens his pencil all around smoothly and evenly, as though it were planed off in an automatic sharpener, is systematic and slow to anger. But he is so very undeviating from a fixed principle that he would drive a woman with a sensitive temperament to distraction in less than six months.

He who leaves the sharpened wood as jagged as saw teeth round the top, has a nasty temper and will want to quarrel on the slightest provocation. There are certain women who can manage that sort of man beautifully, though, and if he gets a wife with a calm, persuasive eye, he will in a few minutes be as meek as a lamb.

The man who doesn't stop to polish the point of lead once the wood is cut away, has a streak of coarseness in his nature. He who shaves off the lead till the point is like a needle is refined, delicate and sensitive.—*New York Journal*.

LONG AND FAITHFUL SERVICES OF SATISFIED EMPLOYEES

Of the several hundred employees of the Joseph Dixon Crucible Company, two hundred and fifty have been with the company for five years or longer; one hundred and twenty-three for ten years or longer, sixty-nine for twenty years or longer, forty-eight for twenty-five years or longer, six for forty years or longer, and one "girl" has been with the company well over fifty years. In its eighty-two years of existence, the Dixon Company has never known a strike.

THE daily papers tell us that Timothy Lester Woodruff, the well known politician of Brooklyn, had indicated his desire to enroll in the Republican Party and make the cross under the party emblem with a fountain pen instead of using a black lead pencil as required by law. As one of his friends puts it, "Wouldn't it agitate you to find that with two little strokes of a fountain pen you had amputated yourself from the party of which you were the head?" The only advice and moral is, get the habit of carrying and using a Dixon pencil.

MORE ABOUT GRAPHITE FOR GAS ENGINES

The following letter passed from a chief engineer to one who had made inquiries concerning the use of graphite in gas engine lubrication. We are at liberty to use the letter, but must leave blank the names.

DEAR SIR:—

Answering yours of the 12th instant in regards to Graphite in Gas Engine operation, will say that I have in operation 180 H. P. twin tandem natural gas engine operating a sixty cycle 220 volt alternator—direct connected at 225 R. M. P. This engine has operated at an overload and had given considerable trouble from heating of main bearings—piston pins burning up, and due to their small size the pressure is great, about 1500 pounds per square inch, making it hard to lubricate them properly. I took charge of this engine when it was giving great trouble last April. I dismantled it one part at a time after working hours, refitted everything properly and began using Dixon's No. 635 Powdered Flake Graphite. I finally overcame 75% of the troublesome heating and have a quiet running engine that operates eleven hours daily with no more than normal attention. I use two teaspoonfuls of graphite to each gallon of oil passed through oil cups. I feed oil so fast (practically one drop per each twelve revolutions, say, twenty drops per minute at each oil cup), that graphite gives no trouble from settling out and blocking up of passages. Our oil passes to drain pans and is passed to filter using bone black for purification, and very little graphite is removed by filter. The other impurities are practically removed, giving us good clean oil, and we re-use it constantly. Our make-up oil amounts to only four gallons per month. I also use a teaspoonful of powdered graphite to $\frac{1}{8}$ pint of coal oil mixed and thrown into intake of engine daily, this keeps piston rings and valves in good operating condition—no sticking of rings is noticed and rings are just tight enough to grooves to prevent knocking. I would not care to operate a gas engine without graphite, and would consider it odd if the big gas engines were to be operated without graphite also.

As to previous experience with graphite, will say that I had two 100 H. P. twin cylinder vertical gas engines and one 100 H. P. three cylinder vertical, one 35 H. P. and a 12 H. P. gas engines where formerly employed. I used to allow engines to inhale a teaspoonful of dry powdered graphite through intake every day, this kept governor valve and mixing valves in fine shape—also valves and cylinders showed graphite coating when examined. As for lubrication, I used to put two pounds of powdered flake graphite in crank case of each engine (about $\frac{1}{2}$ barrel of oil to a crank case), and found very little wear and no heating; engines were as good as new after three years constant operation, did not have to renew piston rings, as they did not need it, valves reground every three months, all around compression 120 usually. Had pretty good luck too, constantly a 35 H. P. gas engine direct connection, to a 35 K. W. 110 volt generator. The 12 H. P. direct connected to a 10 K. W. machine, also 300 ampere on big machine, and 100 on small one were common loads, so you realize these engines did some work. Other gas engines operated ammonia compressors belted, two fifteen ton, one forty ton; I have used graphite on heavy bearings in rolling mill work, having been M. M. of furnaces, this city, in 1898—blowing engines and the air cylinders or tubs were lubricated with dry graphite. We

just threw a handful at a time in intake of air cylinders every half hour or so. In our machine shop for repairs we used graphite on planer V's and on all sliding surfaces, our pumps had wipers on plungers, which were swabbed with graphite and cylinder oil mixed to a paste. I use graphite in oil to lubricate the metallic packing between cylinders of my 180 H. P. gas engine and rod is like a mirror.

I believe I've told you about everything I could think of around a gas engine where graphite is used by me, except the cams. These I swab every hour with graphite and gas engine oil.

Should any other question suggest itself to you, I should be pleased to answer same at any time.

Hoping this is satisfactory, I am,

Very truly yours,

CORRALING THE ENGINE

"Can you run an engine?" asked Pat, a roundhouse attendant, of the yardmaster.

"No," he answered. "Can you?"

"Can Oi run an engine!" sniffed Pat in derision. "If there's anything Oi'd rather do all day long it is to run an engine. Huh, can Oi run an engine!"

"Suppose," suggested the yardmaster, "you get up and run that engine into the house."

"All right, Oi'll do that same," Pat bluffed, and he climbed into the cab, looked the ground over pretty well, spat on his hands, grabbed the biggest handle and pulled it wide open. "Zip!" she went into the roundhouse. Pat saw the bumpers ahead, and, guessing what would happen, reversed the lever clear back. Out she went—in again—out again.

Then the yardmaster yelled, "I thought you said you could run an engine!"

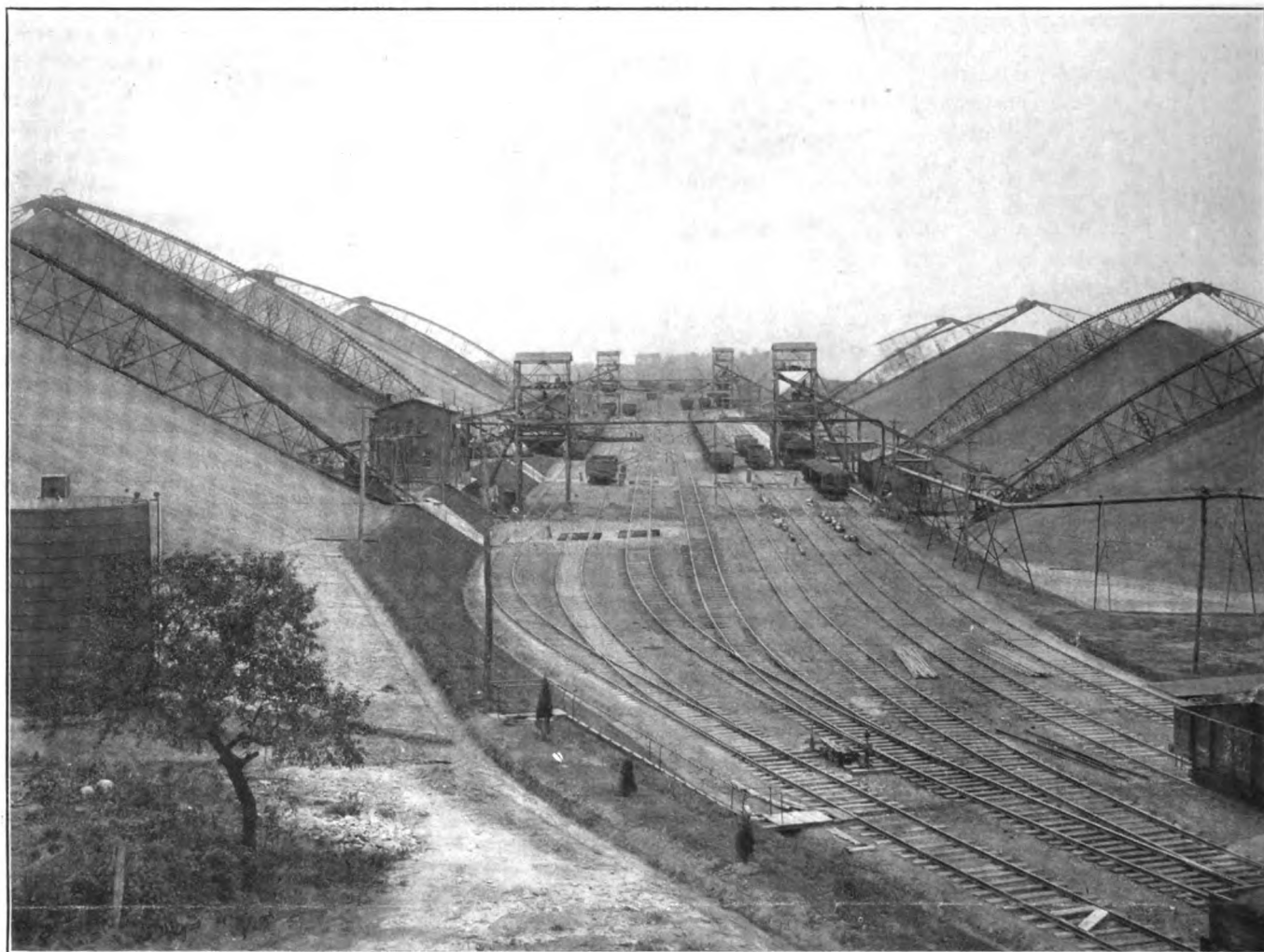
But Pat had his answer ready. "Oi had her in three times. Why didn't you shut the door?"—*Canadian Manufacturer*.

GRAPHITE FOR BREAKING IN BEARINGS

I have found cases of new line shafting where grease had been put into the bearing as soon as it was started, which is wrong. In a new bearing there is more or less dirt, and when grease is put in first it is liable to run hot, because the grease does not wash out the dirt. When it is desired to use grease, oil should be used for a few days in order to cleanse the bearing, and after the bearings have run for a few days without getting hot, it is safe to use grease. Bearings should receive proper care every day, and we should avoid the practise of some engineers and oilers of putting grease into the bearings once a month and paying no more attention to them until the next month. We can never tell what will happen to a bearing in this time. The right thing to do is to go over the shafting every morning after the engine is started and work the grease into the bearings. In this way there will be no danger of bearings running hot. I have found it a good practise to mix graphite with grease to be used in line shaft bearings.

—H. JAHNKE in *Southern Engineer*.

FRICION can't play possum with Dixon's Flake Graphite—it lubricates.



COALING PLANT OF PHILADELPHIA AND READING COAL AND IRON COMPANY, ABRAMS, PA.



COALING PLANT OF PHILADELPHIA AND READING COAL AND IRON COMPANY, ABRAMS, PA.

FIVE YEARS SEVERE SERVICE

Another Instance of the Durability of Dixon's Silica-Graphite Paint

The illustrations on this page show the coaling plant of the Philadelphia & Reading Coal and Iron Company, located at Abrams, Pa. This plant was built over five years ago by the Dodge Coal Storage Company of Philadelphia, and at that time received two coats of Dixon's Silica-Graphite Paint. The first repainting of the plant has just recently been completed.

This is a creditable and satisfactory service for a protective paint, especially in view of the somewhat severe conditions to which the paint was constantly subjected.

If you buy or apply protective paints, we believe that you will find it to your interest to specify or select Dixon's Silica-Graphite Paint, which has made economical records of the kind noted in all parts of the country, and under varying severe conditions.

BY DEGREES

"Have you read Peary's first article in *Umpton's Magazine*?" asks the man with the frazzled whiskers.

"Haven't got to that, yet," answers the man with the extemporaneous eyebrows, "I've not finished poring through the advertisements of things to which he has given testimonials."—*Life*.

MAKING A WATCH

A Few Facts Not Generally Known

There is no little fascination about a watch, a compact little piece of mechanism which you carry in your pocket, and that with proper care on your part will tell you the "time o' day." There must be something in us that inherently responds to the mystery of the watch, for it is known to exercise charms over the very youngest of the race.

A booklet gotten out in the interest of the Ingersoll-Trenton watch, gives quite a little inside information on the business of making watches. In speaking of the jewels, it tells us what most of us know already, that these are necessary in order to keep down the wear that would be inseparable from metal bearings. It makes us appreciate the possibilities of wear and friction in the watch more fully, however, when it states that the five points in the "escapement" (the parts you see moving in the watch) make 432,000 motions every twenty-four hours. This means over 3,000,000 motions a week. In this connection it is to be remembered that the watch is one

of the very few pieces of mechanism that runs practically without cessation, month in and month out. Most pieces of machinery rest over night, and on Sundays and holidays. All at least have certain periods of rest. But this does not apply to the watch, which is constantly on the job.

Perhaps some of us may not know that most of the watch makers make only the movement of a watch—the works. These are sold through trade channels, and the retailer makes his purchase of works and cases separately, putting them together in his own establishment. It seems reasonable to suppose that such a system is really not the best. No one is in a position to assume the whole responsibility for the entire finished product.

In this booklet referred to, the term "gold filled" is explained. The process of "gold filling" consists in taking two sheets of gold between which is placed a section of base metal, a sort of sandwich. To this "sandwich" heat and pressure are applied and the three sheets are welded together and become one; the gold of course being on the outside.

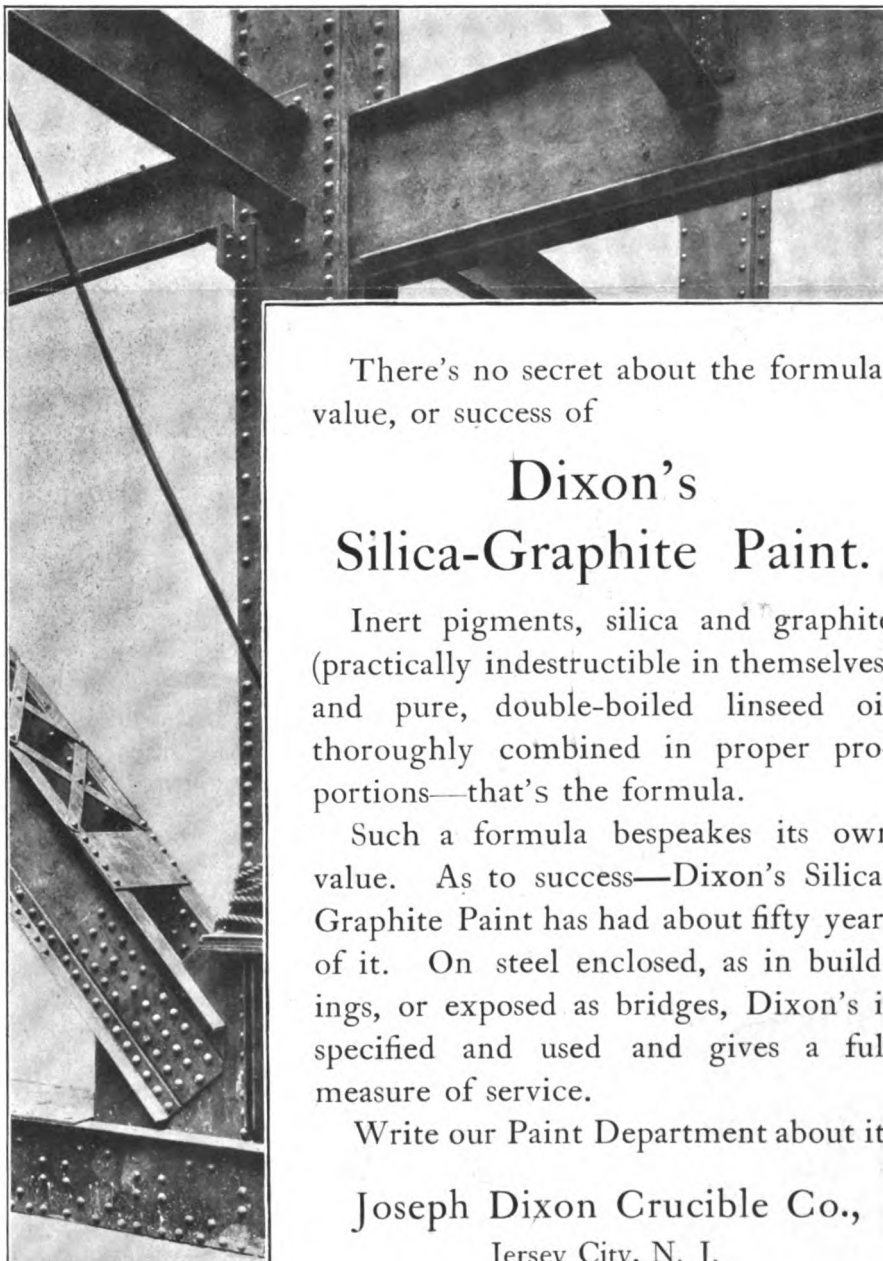
GRAPHITE IN MARINE ENGINE CYLINDERS

A little article of interest on "The Lubrication of Marine Engine Cylinders," by Mr. A. T. Rowe, appeared some little time back in *Power and The Engineer*. Mr. Rowe went on to say that in the vertical engine he found little benefit from cylinder lubrication, though he does state that without lubrication it was found necessary to watch more closely the piston rods so as to provide against overheating. In connection with the use of graphite Mr. Rowe states:

"As to using graphite for the purpose, it is sometimes added to the cylinder oil in the swabbing bucket, but I have never seen it introduced into the steam, although I do not see why it would not prove effective."

AN INMATE of the Warren County, N. J., almshouse says that peppermint candy is the best thing he knows of for prolonging life. He celebrated his 103rd birthday last December. He eats as much candy as all the other inmates of the almshouse combined, and occasionally takes a smoke and a chew. He is active and spry in spite of his advanced age.

VOYAGERS to foreign countries look for the American flag and find it not. Only one vessel flying the American flag (exclusive of warships, military transports) passed through the Suez Canal in 1908, and that was only a little one of 626 registered tons.—*The Nautical Gazette*.



There's no secret about the formula, value, or success of

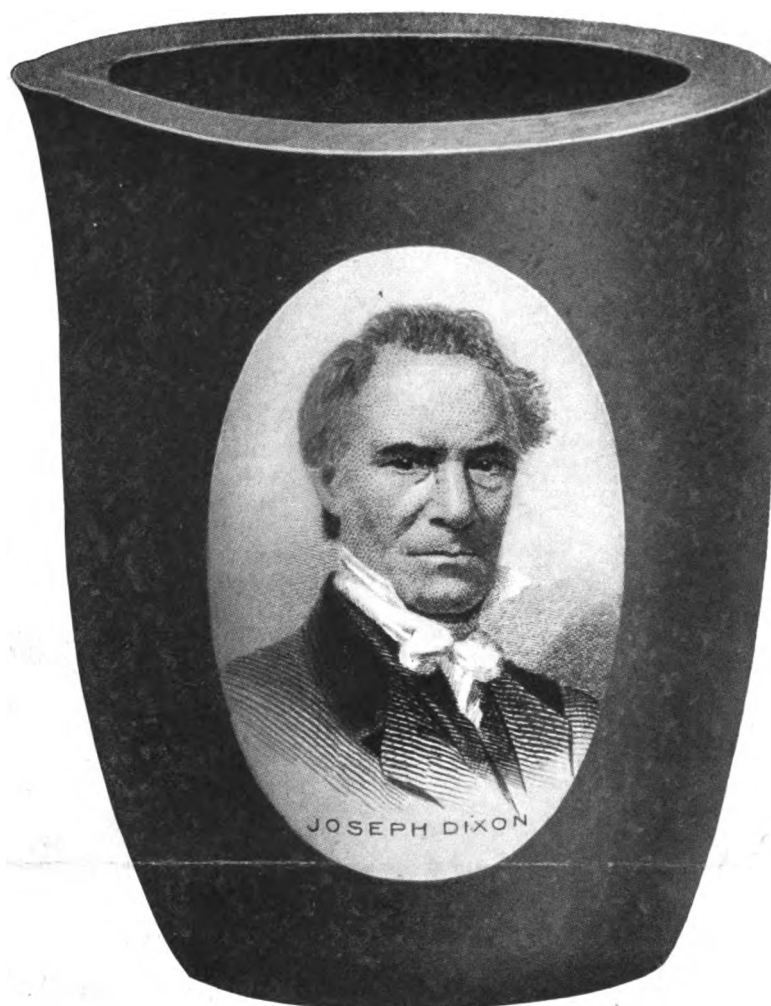
Dixon's Silica-Graphite Paint.

Inert pigments, silica and graphite (practically indestructible in themselves) and pure, double-boiled linseed oil thoroughly combined in proper proportions—that's the formula.

Such a formula bespeaks its own value. As to success—Dixon's Silica-Graphite Paint has had about fifty years of it. On steel enclosed, as in buildings, or exposed as bridges, Dixon's is specified and used and gives a full measure of service.

Write our Paint Department about it.

Joseph Dixon Crucible Co.,
Jersey City, N. J.



The Inventor and The Invention

Joseph Dixon invented the graphite crucible and began its manufacture in 1827. That was the beginning of the crucible industry—we were first in the field.

Naturally we have had the longest experience in the making of crucibles with all the benefits that only long experience can give. Perhaps this fact alone may not PROVE that Dixon Crucibles are the best. But the fact that we have been selling them for over eighty years means that they must possess a certain reliability—at least enough to warrant a trial and guarantee its safety.

Place a trial order with us and see how Dixon's Crucibles compare with what you've been using.

Joseph Dixon Crucible Company,
Jersey City, N. J.

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GRAPHITE

VOL. XII.

APRIL, 1910.

No. 4.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

WHAT THE GUARANTEE COVERS

The word "guarantee" seems to possess a certain potent influence over the average buyer. As a matter of fact, however, the guarantee in itself may be worth little or nothing. Its value depends entirely upon the integrity of the concern giving the guarantee. The situation is comparable to the word and oath of an individual. If his word is good his oath is unnecessary. If his word is not good, we have every reason to be suspicious of his oath.

The reputable manufacturer naturally produces a reputable product. Such a product does not require a guarantee—and a poor product has never yet been made any better because a guarantee went with it.

The manufacturer of the average article can guarantee the materials he puts into it and the processes of manufacture. After the article leaves his hands, however, the manufacturer cannot guarantee the results that a particular individual may secure.

This matter of guarantee comes up very frequently in connection with the sale of Dixon's Silica-Graphite Paint. We can guarantee our paint as far as concerns the integrity of the product itself. We guarantee it against adulteration in our own factory. We guarantee the proper proportion of the best of materials in its composition. This is as far as our guarantee can extend. No matter how carefully and well our paint is made; no matter how excellent the material put into it, it cannot give good service if it is improperly applied, or if the surfaces to which it is applied are not in proper condition to receive the paint. The application, which is a vital factor in the service a paint renders, is beyond our control.

No reputable manufacturer will extend a guarantee to cover conditions which are beyond his influence. The manufacturer of a flour cannot guarantee the quality of bread a woman will make with it, nor the manufacturer of a textile the kind of suit a tailor will produce.

The product that has nothing but its guarantee to recommend, it is a rather suspicious sort of a product. The name, age and reputation of the concern behind a product is the best basis of guarantee. If you will name over to yourself the companies who guarantee their products as far as concerns

the materials entering into them, you will observe that the guarantees are unnecessary from these concerns and that you will as quickly buy the product without any specified guarantee. Take a Tiffany guarantee, for instance, can it add anything to the confidence the buyer has in Tiffany's goods?

Dixon's Silica-Graphite Paint is guaranteed by its own reputation. It has been on the market for nearly half a century, and is being used in almost every quarter of the globe. The prestige behind the Dixon name is too valuable for us to risk it with an unworthy product. That is another guarantee that each buyer of Dixon's products has. A safe rule for buying may be laid down as: Purchase only those articles in which you have sufficient confidence to make the guarantee unnecessary.

THE TEXT

"I have used your lumber crayons for years and no other seemed to do the business.

"To show what I have tested, have marked on railroad rails, also ties, during the summer, and the next coming spring, regardless of the rains and snows, the marks of your crayons were visible."

THE SERMON

The above was written us by an employee of the Chicago, Milwaukee & St. Paul Railway Company, and it illustrates practically the claim which we make for superiority of our crayons as standard for quality, as we use the finest metallic pigments in their manufacture.

If interested, we would like to send you a descriptive booklet.

OPPORTUNITY

Master of human destinies am I,
Fame, love and fortune on my footsteps wait,
Cities and fields I walk; I penetrate
Desert and seas remote, and passing by
Hovel, the mart, and palace, soon or late
I knock unbidden once at every gate!
If sleeping, wake—if feasting, rise before
I turn away. It is the hour of fate,
And they who follow me reach every state
Mortals desire, and conquer every foe,
Save death; but those who doubt or hesitate,
Condemned to failure, penury, and woe,
Seek me in vain and uselessly implore,
I answer not, and I return no more.

—J. J. INGALLS.



ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

OFFICERS:

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Vice Pres. & Counsel—WILLIAM H. CORBIN
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Secretary—HARRY DAILEY
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ATLANTA OFFICE, Fourth National Bank Building.

SPRING IS HERE!

But what would Spring really be if it only brought balmy, fragrant air; if the bare, dry field did not renew itself in green, clinging grass, which not only beautifies but protects the soil from the disintegrating powers of rain and wind. Renewal is an essential of nature. Apply this natural law to the industrial world. Renewal is there an essential also.

Permit us then to offer, with a springtime fervor and opportuneness, a paint suggestion.

Have you examined your roofs, stacks, cars, fences, bridges, buildings and all steel structures, to detect signs of rust, blistered and cracked paint and other evidences of the ravages of winter that has just passed, or of careless application of paint, or of defects caused by the use of a poor paint?

If you decide to use a superior paint, which will in the end prove the most economical, we recommend Dixon's Silica-Graphite Paint.

Why? It has been successfully used in all climates for over forty-five years. Its important component of Ticonderoga Flake Graphite perfectly shields the life of the binder, the best linseed oil procurable. Another component of this famous paint, Silica, affords an additional protection against the destructive powers of gases and chemicals, which operate in atmospheric conditions in our manufacturing centers. The linseed oil used is a strictly pure, old process oil, thoroughly filtered and aged, the best made and furnishes an unrivalled binding material. No other paint can compare in reaching these high standards. Write us for service records in your neighborhood.

Caution! When you specify Dixon's Silica-Graphite Paint, be sure to provide in your painting contracts that blisters, dirt and rust be removed from the surface of your structure; and that thinners and dryers shall not be used. Stir well and apply on a dry day. Dixon's colors are furnished to the trade in original packages.

The result of many years perfect service in protecting your structure will then wed you to Dixon's Silica-Graphite Paint for the future.

If this springtime thought appeals to you, write to the Paint Department for our literature, which will apply to the work you have in mind.

A postscript thought! Have you ever tried Dixon's Silica-Graphite Paint on wood surfaces; such as shingle roofs, etc., where one of the four colors will suit you?

The result is just as remarkable as upon steel surfaces.

—L. M. S.

ALTON, ILL., 2/7/10.

Editor of GRAPHITE:—

I have on my desk the January number of GRAPHITE which is, as usual, full of interesting matter. In reading Mr. Slauson's article on page 2102, I found one paragraph which reminded me of a detail of the experience which I had with an old-time slide valve engine's cross-head guides—the same one I once wrote you about. Mr Slauson says: "It is probably fortunate that the graphite is uncombined with the oil or grease, for as the latter acts as the body which serves to retain this graphite as a permanent lubricant, the one *will be worn away*, leaving the other to fulfill *its* function." In the experiment I made with the old cross-head guides, the graphite remained in the form of what may be called a veneer on the surface of the guides, becoming thinner, and yet thinner, as the cross-head gib's passed back and forth over them until finally the coating of graphite became so attenuated, that the abnormally heavy pressure caused it to crack and roll up at the edges, and then, of course, it was swept away; but this took place long after the last vestige of the oil, with which it had been mixed, had disappeared. I would very thankfully accept a copy of your booklet on commutation, and also a copy of 190-C. Thanking you in advance, and wishing you continued success, I remain,

Yours very truly,

THE organ of memory in some people seems not to be for the retention and reproduction of what it receives, but yields up a special creation of its own.

LOCOMOTIVE CYLINDER LUBRICATION

With the very general use of superheated steam, attention is being given more than ever to the use of graphite as a cylinder lubricant. The fact that the cost of operation is increased by less than three cents a thousand miles by the use of Dixon's Flake Graphite, assures us that it will only be a question of time before Dixon's Flake Graphite is more generally used.

The larger use of graphite as a lubricant will be helped by the activity of the different companies manufacturing graphite lubricators, as these manufacturers are endeavoring to prove that their lubricator is a paying proposition to the railroad companies.

However, there is one difficulty to overcome, and that is the fact that purchasing agents of railroad companies, not being familiar with the various kinds of graphite, are prone to buy the cheapest graphite that they can get under the impression that there is little or no difference in the graphite itself, but a wide difference in the prices.

If this is not corrected the result will be that graphite lubrication will be more or less condemned and the lubricators themselves blamed for the unfortunate results due to the use of inferior graphite.

We have already been advised by the representative of one lubricator manufacturer, that they have practically quit trying to push their lubricator because of inferior grades of graphite that have been bought by the purchasing agents, which brought more or less criticism upon the lubricator itself.

REGULATING THE SPEED OF STEAM ENGINES

By W. H. WAKEMAN

Part II

Fig. 3 illustrates one style of governor used on automatic engines. An eccentric gives motion to the valve, but it is not fixed on the shaft. While in the extreme position illustrated, suppose that the center of this eccentric is two inches from the center of the crank shaft. This causes the valve to travel four inches for each revolution of the fly wheel. When full speed is attained with a light load, the distance between these two points may be reduced to one inch, giving a movement of two inches to the valve. This effect is secured

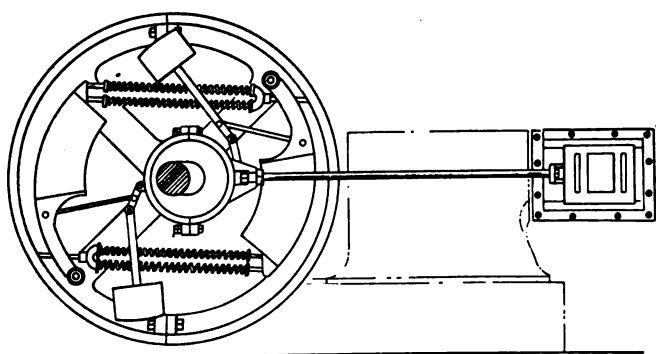


FIG. 3.

by the centrifugal force of revolving cast iron weights, and the action of springs. Without fully describing this action it is only necessary to say that with a heavy load the valve travels as far as the controlling mechanism will permit, but

when a part or all of this load is removed, the travel is shortened, thus admitting steam in direct proportion to the load, and maintaining a nearly constant speed.

For this and all other styles of automatic engines, the steam pipe is run from the boiler directly to the steam chest without passing through the governor, hence the supply is never throttled, because the throttle valve is supposed to be wide open at all times when the engine is in service. This gives full boiler pressure in the steam chest, except a slight reduction due to friction in the pipes and passages, etc.

There is another style of governor used on high speed engines in which the eccentric is bored out round and given a loose fit on the shaft, to which it is not fastened directly by set screws, but a combination of springs and weights moves this eccentric on the shaft, thus changing its position in relation to the crank. It follows that the valve travel does not change, but the valve closes early for a light load and later when more is added, hence steam is used according to the load carried, although not in direct proportion to that load at all times.

A very important point to be taken into consideration in this connection is that the valve of an automatic high speed engine, controlled by a shaft governor, must always move freely, because friction at this point prevents prompt action of the governor, hence more steam than is required will be admitted during one stroke and less for another, causing irregular motion of the fly wheel that cannot be tolerated in modern practise. Although this kind of a valve may be correctly designed and work perfectly when new, the use of inferior cylinder oil will sooner or later prevent satisfactory action on account of sediment left internally, which is baked on by continued action of heat. Judicious application of Dixon's Flake Graphite will give better results if fed in dry to the steam chest and cylinder of such an engine. A bright polish of the working parts will result, less cylinder oil will be required, and in some cases oil may be omitted entirely. It may be mixed with enough good oil to prevent it from flying about the room if preferred.

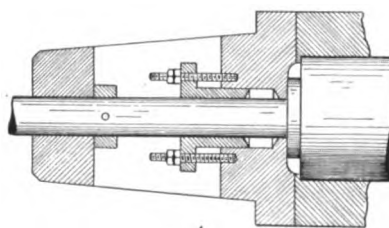


FIG. 4.

The term "Corliss and Automatic Engines" is frequently used in advertisements and elsewhere, but wherever found it shows that whoever used it either did not understand what he was talking about, or else was very careless in the adoption of words used in this connection. The Corliss is one of the best kinds of automatic engines known to the up-to-date engineer, hence there is no good reason for using the above mentioned term, because it states that the Corliss is not an automatic engine.

In all such engines the means employed to secure the desired regulation of speed is quite different from the shaft governor method, yet the result is the same, because the steam valve is closed very soon after it opens, with a light load, and

kept open longer as the load is increased. With this kind of cut-off mechanism the valve is opened positively even if poor conditions cause much friction, but after the valve is released it will not close promptly unless it is well lubricated. The result of this is that more steam is admitted after the governor has indicated the proper point of cut-off for the load carried at that time. If this occurs at intervals only, the engine will race, causing unsatisfactory speed of machines in the mill, shop or factory. Where it is part of the daily program it may not result in very irregular speed, but it will cause steam to be used at a disadvantage, thus proving a constant loss.

Dixon's Flake Graphite will give the desired lubrication of valve and seat at low cost. It should also be used when packing the valve stems of these engines as illustrated in Fig. 4. A collar on the valve stem makes an imperfect joint, hence steam and water comes out at this point, unless the stuffing box beyond is properly packed. Asbestos wicking is suitable for this service, and it is not expensive, hence when coated with Dixon's Flake Graphite it constitutes an economical packing, one size of which will pack both large and small stuffing boxes, making it unnecessary to carry several sizes in a large plant where each engine is made different from all others. It can be removed quickly because it does not stick to the iron.

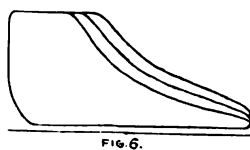
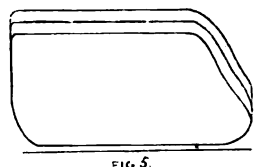


Fig. 5 illustrates three single diagrams taken from a throttling engine with a light, a medium and a heavy load. They show the effect of changes in the governor, as the mean effective pressure is varied to suit changes in the load. Fig. 6 illustrates three single diagrams from an automatic engine, under the same conditions illustrated by Fig. 5 so far as the load is concerned. The mean effective pressure is increased to meet the requirements of a greater load in both cases, but the methods adopted are quite different.

(The End.)

THE GOOD IN US

By H. S. SNYDER

Human nature may be roughly resolved into good and bad, both elements existing in the same individual. Someone has pointed out this fact and gone on to describe how the defaulting cashier is the man who was so good to his mother, and how the chronic grouch is one of the leading factors in the S. P. C. A. Perfection in the individual is something to strive for, but up to the present writing it has never been attained.

In estimating a man, or a woman either for that matter, the fact that errors and indiscretions may be charged against him does not mean that he is a failure—if it does, there has never been a successful man. But if the good qualities and accomplishments outweigh his faults and failings, he should be given credit on that basis. In the lives of all our great men since the world began it would probably be possible to find

blemishes if we knew the whole story. We believe, in fact, that a book has recently appeared on the lives of the American patriots in which it is shown that many of the honored names in American history were borne by men with their full share of human faults in one form or another.

We seem to be very sensitive to this percentage of error and quickly turn against the man whose weakness is discovered regardless of how much good in general the same man may have accomplished. This attack on personality and private life is a favorite one in politics and corruption. Judge Lindsey, who has done such courageous work in Colorado, finds it necessary to contend with just this sort of attack. It is such a powerful weapon that the conscienceless readily seize and wield it.

This is no attempt to condone depravity or to excuse sustained malicious intent. It should be remembered, however, that the occasional falling from grace of the man who ordinarily succeeds in resisting temptation, is a different matter from that of the man who not only makes no effort, but who throws himself in the way of temptation and revels in the yielding.

Those who are supposed to know, tell us that the line between sanity and insanity is not more than a thread. The perfectly normal individual can be subjected to certain mental strains that will temporarily, and sometimes permanently, unsettle his mind. The analogy holds in the normal temperament, and whether we are good or bad depends to a considerable extent upon the conditions surrounding us, the kinds of temptation to which we are subjected, and the form in which it comes. Probably only the drunkard knows fully the torments of the temptation to drink. The cynic who sneers at this temptation is invariably the one to whom drink is no temptation.

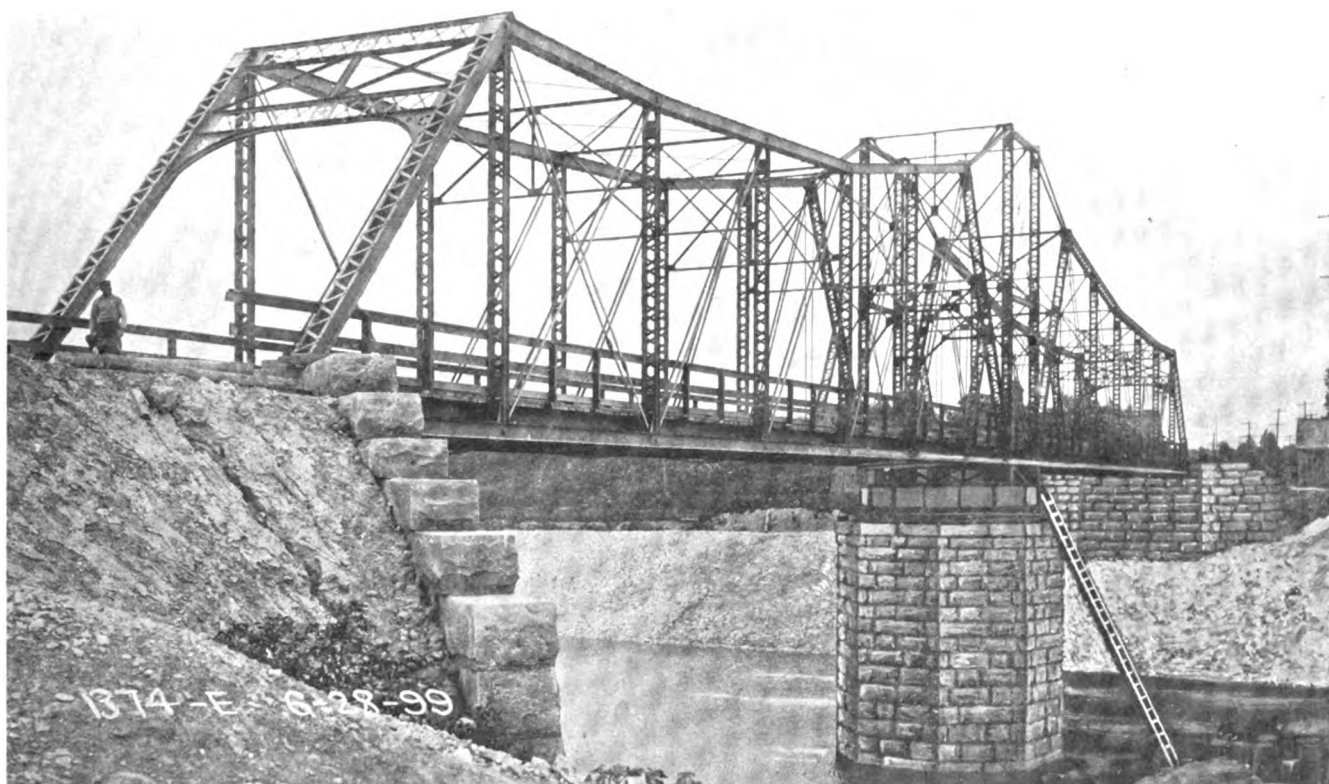
If there is any moral in this, it points toward charity and proper appreciation of our fellow men for the good they have done. Remember in judging that you are dealing with human nature which is never perfection; that you are judging a temperament of which you may have no knowledge; that the conditions of a temptation are unknown to you; and, finally, it is well to bear in mind the words, "Let him who is without sin among you, cast the first stone."

WRINKLES

Gas Review says: "If your engine has good machine fitted joints, as all should have, asbestos of $\frac{1}{32}$ or $\frac{1}{16}$ inch covered with graphite, will give a good joint, and will come away perfectly if it becomes necessary to dismantle again. But when using this thin packing, it is necessary to have the joints absolutely clean from all other packing.

"Graphite, bicycle chain graphite, is almost a necessity with the gas engine operator, for if you will use graphite upon all threads, or surfaces that are subject to good heat, you will find that they all part with ease."

METAL parts that have become rusted in place, can usually be separated if thoroughly soaked with kerosene oil. Even then care and time are required in order to separate without breaking. When the parts are replaced, the contact surfaces should be covered with flake graphite mixed with oil or vaseline.



BRIDGE OVER DRAINAGE CANAL, SANITARY DISTRICT OF CHICAGO. PERFECTLY PROTECTED FOR SIX YEARS WITH
DIXON'S SILICA-GRAPHITE PAINT.

MONEL METAL

Monel Metal, an alloy of copper and nickel, is rapidly becoming an important metal, and is being largely used by the government as one of its standard metals. It has even been suggested to the government that it be employed for the making of coins. It would lend itself admirably to this purpose, as it rolls, draws and takes a sharp impression as well, if not better, than any of the metals now in vogue.

The Pennsylvania Terminal at 34th Street, New York City, we learn is entirely covered with it, in the form of sheets used on the roof. Its latest application, we understand, is for the manufacture of wire cloth, for window and door screens.

The melting of Monel Metal requires a heat that the average furnace cannot produce, and a crucible that is able to withstand a heat much above that which the ordinary crucible can endure. The Dixon Company has had good success with its crucibles for this work, having produced a special mixture for that purpose.

THE *Nautical Gazette* in May 27, 1909, issue says:—

One of the simplest and most efficient schemes for improving the running of an engine is to occasionally introduce a small amount of flake graphite into the cylinders. The injection can be made through the spark plug opening, and the effect will be that the minute flakes will form a coating on the cylinder walls, filling up the pores in the metal and producing a mirror-like surface which materially will improve compression, aid lubrication, and decrease friction.

SELF-ESTEEM GONE WRONG

One of the favorite stories of the newspaper fraternity relates the rebuke that was given by John R. McLean, of the *Cincinnati Enquirer*, to a star whose head became inflated because he was too well treated by the managing and city editors.

The reporter in question, one of the brightest men who ever worked on the paper, felt his oats to such an extent that he fell into the habit of calling the men immediately over him by their first names. They didn't mind it much, but one day the star reporter met John R. in his office, and immediately shot forth a "How are you, Mac?"

To which McLean smilingly answered:

"Pretty good, Jenkins, but say, don't call me Mac, call me Johnny. Mac sounds too stiff and formal."—*Silent Partner*.

GLOVERSVILLE, N. Y., Nov. 9, 1909.

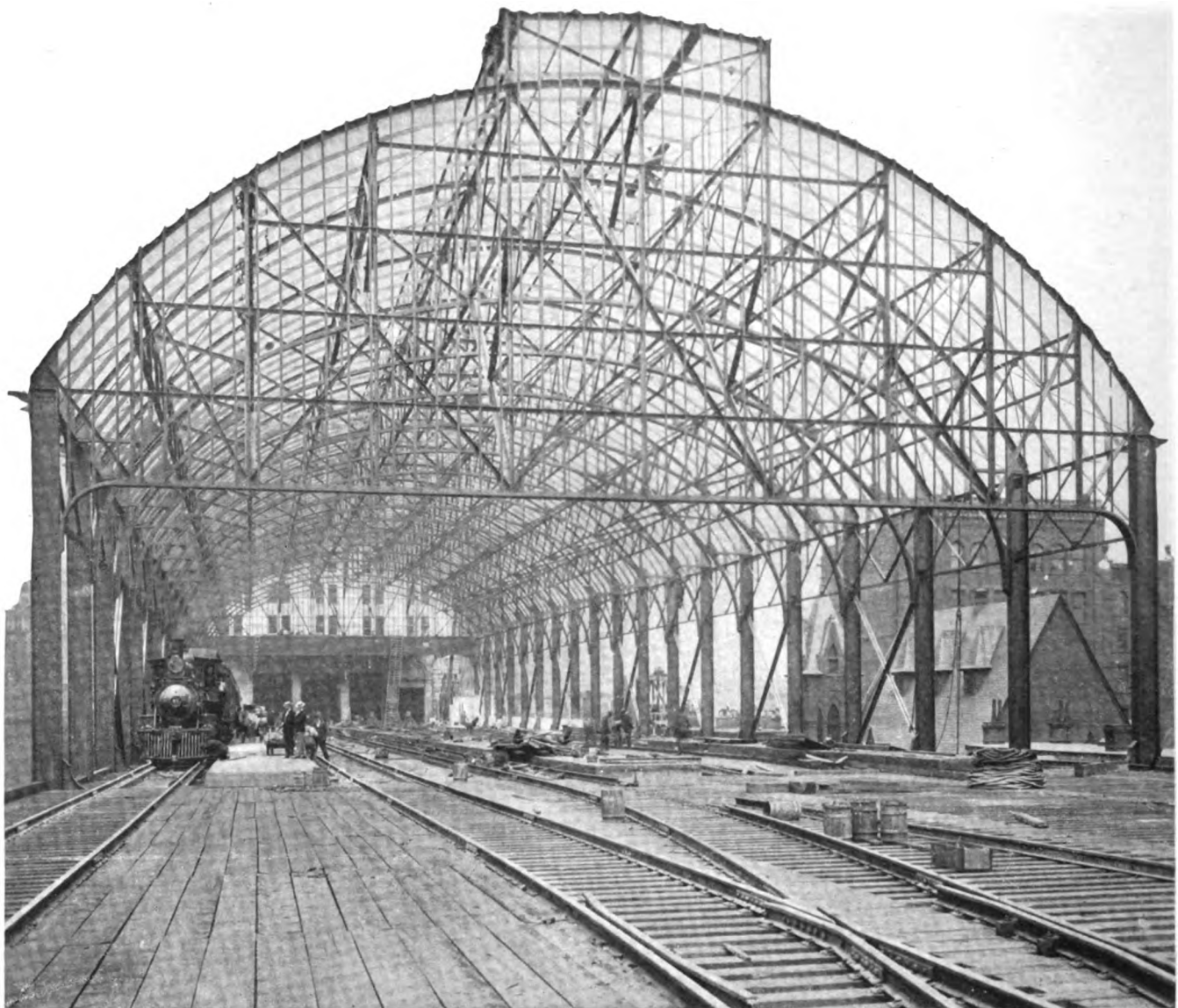
Joseph Dixon Crucible Company,
Jersey City, N. J.

GENTLEMEN:—

Please enter our order and ship at once by express, sixteen brushes for twenty-six horsepower, direct current, Crocker-Wheeler motors, size $\frac{5}{8}$ x $1\frac{5}{8}$ x 3. You have made us one or two deliveries that have been satisfactory, and kindly furnish us the same brushes as before. Size as above we believe to be correct; we remain,

Yours truly,

E. S. PARKHURST & Co.



WABASH TERMINAL, PITTSBURG, PA.

REPAINTING THE WABASH PITTSBURG TERMINAL TRAINSHED

The two views given here, one on this page, the other on the opposite page, show the steelwork of the Wabash Pittsburgh Trainshed at the time of its erection, also the completed Terminal Building. When these structures were put up over five years ago, Dixon's Silica-Graphite Paint was selected to protect the steelwork. Naturally the conditions here are very severe, due to the sulphurous gases escaping from the engines which constantly occupy the shed. On examination the Dixon Paint was found to be in very good condition, but for appearance sake the railroad company decided to repaint, and they again selected the Dixon Silica-Graphite Paint on account of the good results obtained from it.

This trainshed is subjected to peculiar conditions not alone from the smoke, fumes, gases, etc., arising from the locomotives, but the railroad company utilize a portion of this building for unloading refrigerator cars, and the brine drippings from these cars is very destructive to the paint which protects the steel underneath the floor system.

However, all was found in very good condition after the several years of service.

Boller & Hodge, of New York, were engineers; the Pennsylvania Steel Company, of Steelton, Pa., supplied the steel for this structure. Mr. H. W. McMaster is General Manager of the railroad, and Mr. W. F. Purdy, Chief Engineer.

HIS UNUTTERABLE PAST

"Now," said the man who had called to get his fortune told, "before you proceed to read the future for me I want you to tell me about my past. If you can do that I shall know you will not be merely guessing at what may be in store for me."

The lady with the dark, mysterious eyes held his hand and seemed for a moment to gaze far, far away into some remote region. Then she drew a deep sigh and pushed her chair back from the little table beside which they had seated themselves.

"What you ask," she said, "is impossible."

"Do you mean that you can't tell me about my past?"

"Yes."

"So then you confess that you are an impostor?"

"Oh, no. I merely wish to say that no lady could tell you, face to face, about your past."—*Chicago Record-Herald*.



WABASH TERMINAL BUILDING, PITTSBURG, PA.

ILLUSIONS OF GREAT MEN

As the daily papers and the magazines are now giving considerable attention to the foreign medium Eusopia Palladino, and to illusions and spiritism, the following from *The Humanitarian* may be of passing interest.

Goethe states that he one day saw the exact counterpart of himself coming towards him.

Pope saw an arm apparently come through the wall and made inquiries after its owner.

Byron often received visits from a spectre, but he knew it to be a creation of the imagination.

Dr. Johnson heard his mother call his name in a clear voice, though she was at the time in another city.

Count Emmanuel Swedenborg believed that he had the privilege of interviewing persons in the spirit world.

Loyala, lying wounded during the siege of Pampeluna, saw the Virgin, who encouraged him to prosecute his mission.

Descartes was followed by an invisible person, whose voice he heard urging him to continue his researches after truth.

Sir Joshua Reynolds, leaving his house, thought the lamps were trees, and the men and women bushes agitated by the breeze.

Ravaillac, while chanting the "Miserere" and "De Profundis," fondly believed that the sounds he emitted were of the nature, and had the full effect, of a trumpet.

Oliver Cromwell, lying sleepless on his couch, saw the curtains open, and a gigantic woman appear, who told him he would become the greatest man in England.

Ben Jonson spent the watches of the night an interested spectator of a crowd of Tartars, Turks, and Roman Catholics, who rose up and fought round his arm-chair till sunrise.

Bostock, the physiologist, saw figures and faces, and there was one human face constantly before him for twenty-four hours, the features and head-gear as distinct as those of a living person.

Benvenuto Cellini, imprisoned at Rome, resolved to free himself by self-destruction, but was deterred by the apparition of a young woman of wondrous beauty, whose reproaches turned him from his purpose.

Napoleon once called attention to a bright star he believed he saw shining in his room, and said: "It has never deserted me. I see it on every occurrence urging me onward; it is an unfailing omen of success."

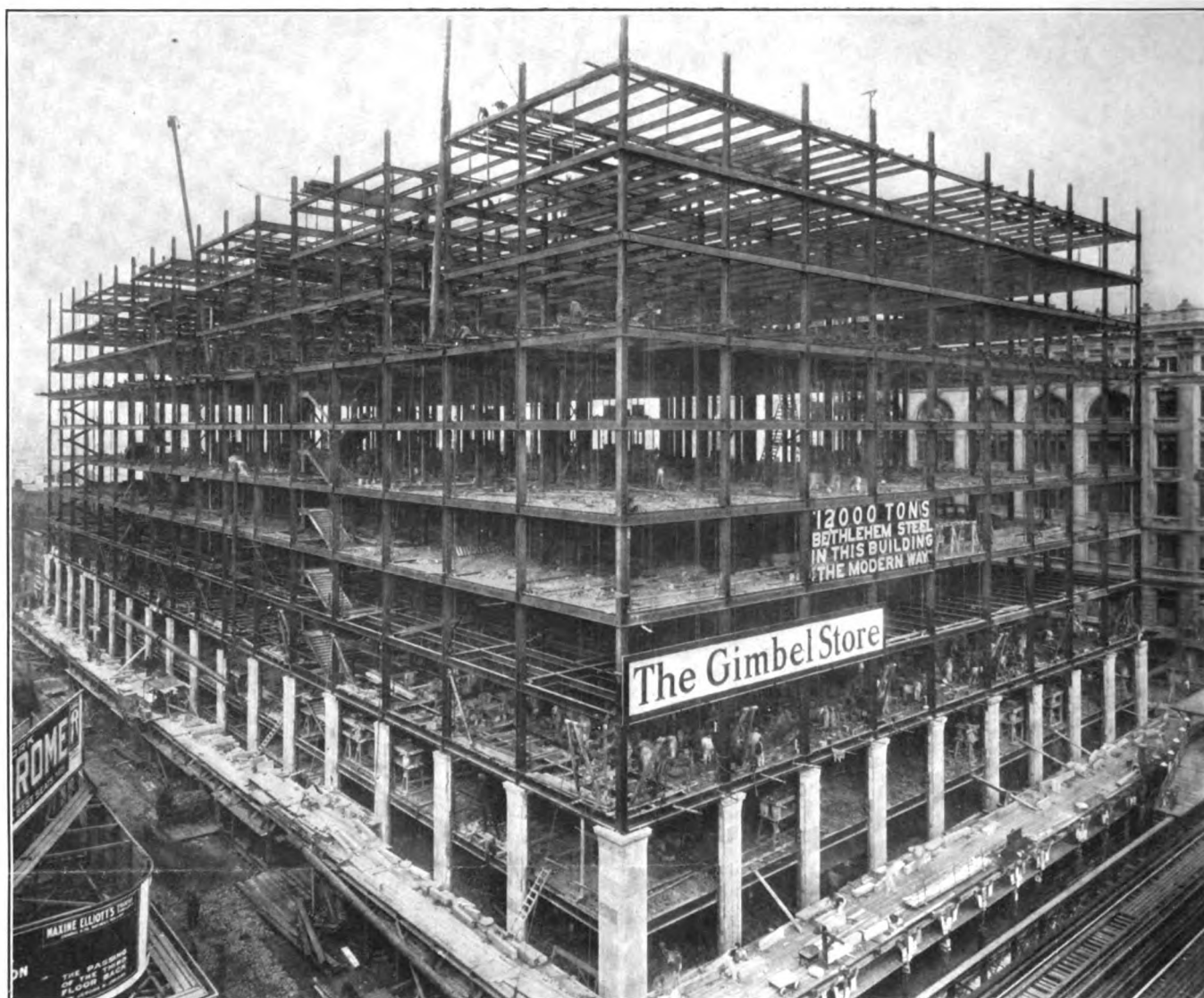
Nicolai was alarmed by the appearance of a dead body, which vanished, and came again at intervals. This was followed by human faces, which came into the room, and, after gazing upon him for a while, departed.

Customer:—Is this an up-to-date doll?

Clerk:—Yes, madam; it says, "Votes for women."

—*Harper's Bazar.*

DEPENDING on being advertised by your "loving friends," is very much the same as depending on your "loving friends" for support in your old age.



GIMBEL BUILDING, NEW YORK CITY

On the third of May, 1909, ground was broken for the great store to be occupied by Gimbel Brothers, taking in the block bounded by Seventh Avenue and Broadway, Thirty-second and Thirty-third Streets, New York City. Almost three months ago the ceremony of laying the corner stone was carried out, and it is expected that by early autumn of the present year this building will be open to the public.

Speed records in construction work have been broken by the Thompson-Starrett Company in building this great store, and by the Milliken Brothers, Inc., in the erection of the 12,000 tons of structural steel. The Bethlehem Steel Company's shapes were used, and the entire tonnage is protected with two coats of Dixon's Silica-Graphite Paint. The steel erection started October 23rd, 1909, and the building was entirely enclosed January 15, 1910.

In each of the thirteen floors—ten above the ground and three below—there are 80,000 square feet of the fireproof hollow terra cotta blocks, making 1,040,000 square feet in all. The column-covering partitions and furring, bring the total up to about 1,500,000 square feet, one of the largest contracts ever let for fireproofing material. It has been calculated that if the hollow blocks were laid end to end, they would stretch 284 miles.

While the excavation was in progress, the Pennsylvania Railroad was pushing its tunnels through Thirty-second and Thirty-third Streets, and now the Hudson and Manhattan Tunnels—the McAdoo system—are being hurried to completion on the Broadway side of the store. The tunnel terminal station will be in the Gimbel Store—the middle basement. So, while no tracks are in the store, it is encompassed on three sides by the new arteries of travel. In fact, there are four layers of transportation at Gimbel Square:

Pennsylvania Railroad Tunnels, Surface Lines,
Hudson & Manhattan Tunnels, Sixth Avenue Elevated.

Pennsylvania tunnels from New Jersey and Long Island pass the store under Thirty-second and Thirty-third Streets.

The Hudson & Manhattan tunnels—McAdoo system—have their terminal station in the basement of the store.

The Broadway surface lines, except Lexington Avenue and Boulevard line, and the Sixth Avenue surface lines, the Thirty-fourth Street cross-town and the Seventh Avenue surface lines—all will serve the Gimbel Store. They, combined, carry 420,000 passengers per day. The Sixth Avenue Elevated carries 238,000 passengers per day.

It is computed that about seventeen million dollars will have been invested in building, fixtures and goods before the doors of the Gimbel Building are opened to the public.



BRIDGE OVER DRAINAGE CANAL, SANITARY DISTRICT OF CHICAGO. PERFECTLY PROTECTED FOR SIX YEARS WITH
DIXON'S SILICA-GRAPHITE PAINT.

VENTURES IN THE MINING OF FLAKE GRAPHITE IN THE UNITED STATES

Crystallized or foliated graphite is not at all uncommon throughout Canada and the United States. The foliations of the crystalline graphite mined by the Joseph Dixon Crucible Company at Ticonderoga, N. Y., are so thin that to distinguish Ticonderoga Graphite from other graphite mined throughout the world, the Dixon Company gave it the distinguishing name of "flake graphite." Dixon's Flake Graphite has been so thoroughly popularized that the name *Flake* has been given to similar formations of graphite mined throughout the United States and Canada.

A writer in *The Engineering and Mining Journal* very correctly says that various efforts have been made during the last ten or fifteen years to organize and maintain the flake graphite industry in the United States, but that the venture has rarely been a success. That today there are more abandoned mines and costly plants than those in operation, that every enterprise which has ever started has been founded on hope, and large sums of money have been ventured by promoters and organizers who have had very little idea of commercial facts as applied to graphite, and still less of the technical side of its milling operations.

The same writer also very correctly says that in general the cost of producing flake graphite is so high and the price at which it is sold so low that even under the most economic conditions the profit is small. In many cases the cost of production has exceeded the returns and inevitable failure has eventually followed. That graphite investors are commonly misled by assay reports. These assays are frequently made

from selected samples, and even when an honest effort is made to obtain an average sample it is invariably a flattering one, and rarely represents the ore handled over a long period.

The Dixon Company has endeavored to keep a record of all the various ventures made in graphite mining, and today has in its scrap book a list of nearly 500 different graphite mines in the United States. The amount of money that has been sunk in these various mines would probably be astonishing if it were known. We know that even in the neighborhood of our own mines at Ticonderoga, hundreds of thousands of dollars have been sunk in an effort to find graphite mines equal to Dixon's and to produce a product the equal of Dixon's Ticonderoga Flake Graphite.

The Dixon Company would probably not care to say how much money it has spent in developing its mining interests, and in obtaining the best machinery and methods for the production of its famous Ticonderoga Graphite. The satisfaction that the Dixon Company now has is in knowing that it has fully standardized its product and that Dixon's Ticonderoga Flake Graphite is now known and used throughout the entire world.

THE Boston Automobile Show inspired the muse of the Boston Branch of the Dixon Company:

"If you wish the right of way—
Good luck, Good speed, a Happy Day,
Use Dixon's Graphite on your car—
The best of lubricants by far."

It's all in the flakes (of Dixon's Graphite.)

DIFFICULTIES AND DANGERS IN AIR COMPRESSOR LUBRICATION

Many times have we pointed out, in the columns of this publication, the difficulty of properly lubricating air compressor cylinders and the limitation of cylinder oil as a lubricant for this work.

Did it ever occur to you, who have charge of air compressors, to consider where the oil that is continually fed to the cylinders goes, or what becomes of it? True, some is used in overcoming friction, but a larger percentage is carried over into the receivers, air lines, etc., in the form of vapor, so much so that oily, gummy deposits are often found throughout the whole air line and the effect of the driven mechanisms seriously impaired.

Then there is a danger of violent explosive mixtures being formed in the air lines by the oil being volatilized, and there are numerous instances on record of dangerous explosions taking place where the cause could be directly traced to the oil from the cylinders.

A lubricant that has been found to give most excellent lubrication for air compressor cylinders, is Dixon's Flake Graphite, and when used the danger of explosive mixtures is reduced to a minimum, or entirely eliminated.

We are continually receiving most gratifying testimonials from users of the Dixon Flake Graphite Lubricants; the following one from Mr. A. H. Goff of Sanger, Texas, we are most pleased to publish at this time in connection with the above.

We have printed a number of interesting communications from Mr. Goff, which are always instructive and full of valuable information. We don't believe the record of the air compressor he mentions can be beat.

Editor GRAPHITE:—

For the past ten years I have been using flake graphite on the air end of an air compressor and I want to tell you about it.

When they started to put in this air compressor and I found out I was to have charge of it when installed, I read up on air compression. I soon learned oil was a poor lubricant for the air end, even though the terminal pressure was low. But it was necessary to have a temporary pressure by gauge of 120 pounds to start the column of water in the air lift system, and I found out by reading, that at this pressure the air was nearly the melting point of lead, which is about 620 degrees Fahrenheit. I at once determined that as soon as the machine was turned over to me, I would use flake graphite, with as little oil as possible, for the very best of oil, I care not if it is valve oil of the highest quality, is a poor lubricant for air cylinders carrying 90 pounds gauge pressure or over.

This machine had been in use at another place when new, and had been taken out and placed in my charge after about six months use. At the first opportunity I took out the discharge valves and found them heavily coated with a deposit of carbon. These I cleaned of all deposit. I then turned my attention to the air cylinder. On taking off the cylinder I had found the inside of cylinder scored in places, and looking very dry. I cleaned everything nicely, and made a dope consisting of a good quality of cylinder oil and Dixon's Flake Graphite, which I applied to the walls of the cylinder. I have now been running this air compressor eleven years. A few

days ago it was taken out and sent to the shop for general repairs. This is the first overhauling the machine has had in that time. I have used Dixon's Graphite on all bearings of the machine as well as in the air cylinder. The air cylinder is in perfect condition, there are no signs of scratches or cutting, and is in as perfect condition as when started eleven years ago. There has been little deposit of carbon. Not as much in ten years, as in six months when only oil was used in air cylinder.

This is my plan of employing Dixon's Flake Graphite in the air cylinder. Three times a week I take out inlet valves, which are of the poppet style, and clean same. Before returning to place, I take out a small quantity of flake graphite and mix with valve oil to make a thick dope. I then take a stick with a piece of rag wrapped around it to make a swab, dip it in the mixture of flake graphite and cylinder oil, and coat the inside of cylinder. Between the intervals of cleaning the inlet valves, say three times a week, I allow the machine to inhale about a teaspoonful of dry flake graphite three times a week for a run of ten hours a day.

The piston rod on the air end has a beautiful polish, and does not show a wear of more than a good $\frac{3}{16}$ of an inch in the eleven year run. In packing this rod, I have used Seldon packing cut in rings and smeared heavily with Dixon's Flake Graphite and cylinder oil.

I would not attempt to run any machinery without a supply of Dixon's Flake Graphite, and to prove how I value it, I have paid for it out of my own pocket for the past eleven years, as the railroad company by whom I am employed, does not furnish it.

—A. H. GOFF, Pumping Engineer,
Sanger, Tex.

LINES ON THE HOOKWORM

The hookworm's now upon the stage
Just left by Dr. Cook.

Its "turn" is not a pleasant one;
I hope it "gets the hook."

The hookworm, far as I can learn,
Is not the bookworm's brother.
Jawn D., I see, would fight the first,
While Andy feeds the other.

Good Bishop Candler seems to scorn
Aid from our Northern chests,
And much as says Jawn D. is one
O' them "philanthropests."

The hookworm makes one lazy—yes,
If some wives had their way,
Their husbands could find none with which
To idly fish all day.

I guess that's all I know about
This pesky germ that tires,
'Cept this—it's not the sort of worm
The early bird acquires.

—*Boston Transcript.*

THE evidence of quality in Dixon's Flake Graphite remains long after the price is forgotten.

THE TRAVELING HEART

I was at church the other night, when Dr. Potts preached an excellent sermon, in the course of which he happened to speak of "the hart bounding over the hills and drinking from the water courses." As I came out of the church Butterwick said to me:

"Pretty good joke of the old man's, wasn't it?"

"What do you mean?"

"Why, in the sermon, that joke about the heart."

"It didn't strike me as being at all facetious."

"It didn't, hey? Well, when a man talks about a heart skipping around over the hills and drinking out of the creek he must either be in fun or else just a gassing for the want of something to say. Who ever heard of anybody's insides carrying on like that? Does your liver roam round over the hills? Can your ribs drink out of the canal?"

I explained the situation, and Butterwick went home to study the Scriptures more carefully.

—MAX ADLER in *New York Weekly*.

LUBRICATION OF GAS ENGINES

R. C. Demary, writing in *Gas Power* on the subject of gas engine lubrication, says concerning graphite:

If a small quantity of graphite, about one tablespoonful to one pound of grease is used, one full turn of the cap or plunger each hour will be sufficient. The graphite and grease should be thoroughly mixed before filling the cup.

On engines where all oil holes are not fitted with cups or covers, it is a good plan to close them with wooden plugs to prevent dust and grit from entering. Oftentimes a bearing will be found which is cutting and running hot. Force a small quantity of pure graphite into it. This will usually prevent further cutting, or at least remedy matters sufficiently to prevent shutting down the power. At the first opportunity, however, the bearing should be carefully dressed, all cuts or grooves being removed with a fine half-round or rat-tail file and finished with emery cloth. Before replacing the bearing, cover well the wearing surface with a thick mixture of oil and graphite. This will fill all minute scratches in the metal and an unusually smooth surface will result.

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

GENTLEMEN:—

I note from time to time reports from some of the users of Dixon's Graphite. A few words about the use I make of it, may interest you. There is one seventy H. P. slide valve engine, four steam pumps, a lot of machinery shaftings, etc., in a very large laundry. A lot of other shaftings and machines, four hydraulic elevators, several dozen hand cars, etc., and we use one barrel of cylinder oil every fifteen months, one barrel of machine oil every ten months, and a few pounds of Dixon's Graphite. The reason we have such a small oil bill may be directly traced to the use of Dixon's Graphite. Is there a plant in existence containing the like number of bearings as above, using as little oil, if they do not use graphite?

Yours truly,

NICK CARTER BEHIND THE FOOTLIGHTS

And again we see exemplified the old saw that a prophet is not without honor save in his own country. The *New York World* tells us that Nick Carter (it is better for your reputation if you do not know him) has been dramatized and produced with great success in Paris, the artistic centre of the world. Alexandre Bisson and Guillaume Livet are responsible for the dramatization.

Those of us who may dare to remember when we read Nick Carter, and who can recall the interest his adventures held for us in the dim past, may (or may not) be surprised to learn of the elevation to which the great detective has arisen.

EPITAPHS

As They Might Have Been Written

Here lies a man who seemed to think
His troubles he could drown in drink.

(He succeeded.)

Here lies a chap quite free from strife,
Who dared to contradict his wife.

(She's married again.)

A hypnotist below doth lie
Who looked a tiger in the eye.

(And the tiger won.)

Dear friends, here lies the bones of one
Who always carried a deadly gun.

(The other man drew first.)

Below, a man quite safely lies
Who jumped a chap just twice his size.

(Take warning.)

Kind friends, stop here and please take note,
Here lies the fool who rocked the boat.

(Companions were rescued.)

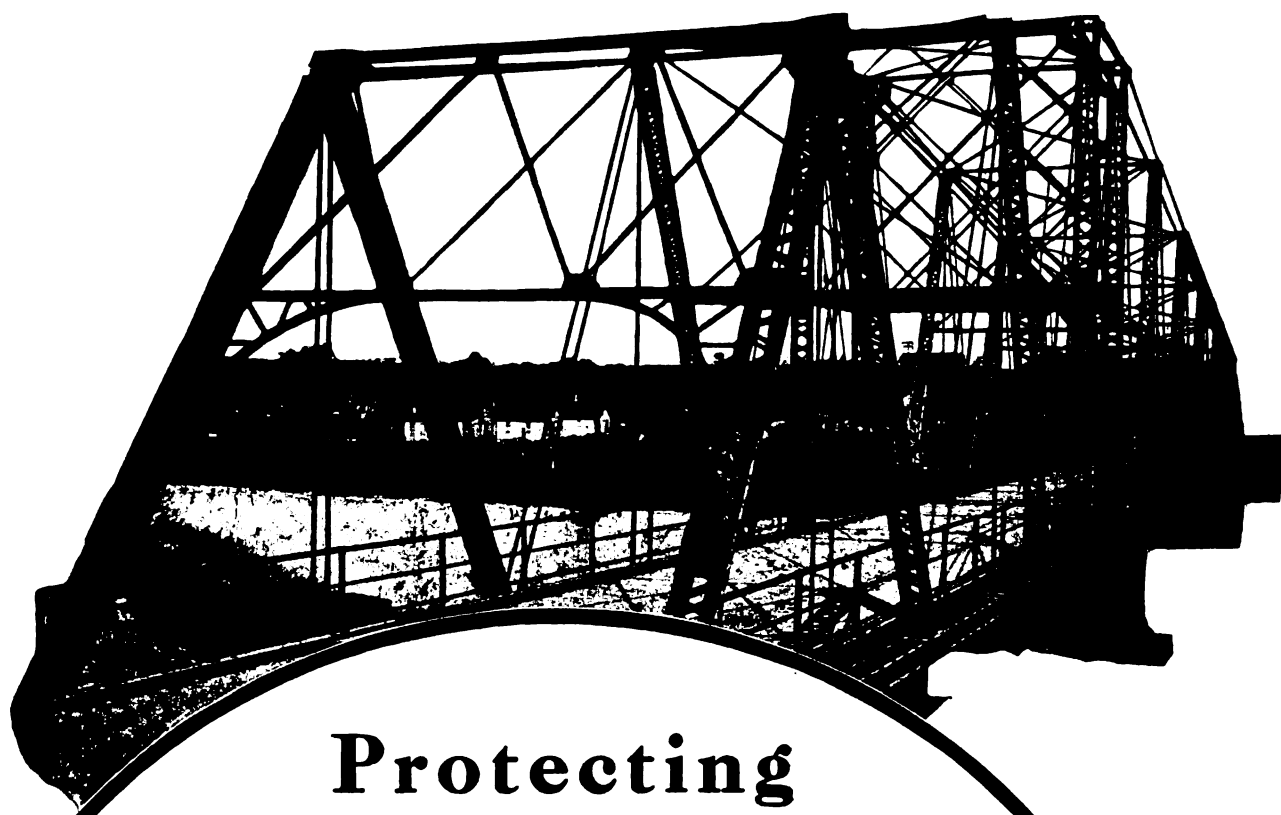
—*Indianapolis News*.

CHAMPION LAZY MAN

THE laziest man has again been discovered. This time he is an Englishman. He spent most of his time in bed, his wife and family being left to maintain themselves as best they could. So lazy was he that, if it were possible, he would get somebody to draw his breath for him. His wife would turn him out of bed in the morning and urge him to seek work, but he would go back again. He had a variety of excuses for his idleness. He was either too ill or too cold or his clothes were not sufficient. He would turn over on his side, and with a yawn, say he did not want to be spoken to. When he was hungry he crawled out of bed and helped himself to the children's food and went back again. On his wife's complaint to the Magistrate the man was sentenced to six months in the workhouse at hard labor.

WE ARE TOLD THAT

King Edward's collection of gold and silver plate at Windsor, started by Charles II, is surpassed only by the treasures of the Czar.



Protecting Steel Structures

Exposed steel must be provided with *some* protective material—the problem lies in the *particular* selection. One of the deciding factors for or against a paint is its pigment. If there is any secret about the value of

Dixon's Silica-Graphite Paint

it lies in the pigment, silica-graphite. These elements in themselves are practically indestructible, and being inert help to preserve the vehicle, linseed oil. This quality of inertness is vital, and pigments that do not possess it (and there are quite a few of these) act on the vehicle chemically and tend to destroy its elasticity and life. That's one reason why Dixon's Silica-Graphite Paint gives such excellent service on bridges and exposed steel of all kinds.

Joseph Dixon Crucible Co.
Jersey City, N. J.

GRAPHITE

VOL. XII.

MAY, 1910.

No. 5.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

A PERSIAN STUDENT'S VIEWS OF AMERICANS

We read in one of the New York papers that a Persian student at Columbia College says there are only three real Persians in the United States, that all those rug sellers, dancing dervishes, curio brokers, etc., are no more Persians than they are Turks; not as much. They come from a borderland province which the student says is more Ottoman than Persian. They are not Mohammedans, either (Allah be thanked), and when you come right down to it they cannot even speak the Persian language.

The student tells us that Americans are the absolute antipodes of Persians, the Americans live for money and they die for money, furthermore they kill themselves trying to get it, in fact all

of the American energies are directed toward the acquisition of wealth. This has resulted in the most perfect industrial development in the world. It has had its advantages in that direction at least, whatever may be said of the disadvantages of such a system.

It would be impossible to make a Persian even understand the American industrial system. The Persians are a pleasure loving people, they do not study practical things, until a short time ago it was considered a disgrace for any but the class of tradesmen to engage in business. This system has resulted in the absolute neglect for centuries of all industrial progress. In all of Persia there are only six hundred miles of railroad.

Cholera, according to this same student, is "the most popular malady in Persia." It is to the Persian what appendicitis is to the more highly civilized American, only, as he remarked, you can have it as many times as you like, or, rather, as many times as you can stand it.

A PROFESSOR at a well-known engineering college says that but for occasional innovations in the application of learning, such as the following, he would find it hard to judge the extent of his usefulness.

This question was asked upon an examination paper: "What steps would you take in determining the height of a building, using an aneroid barometer?"

The answer was: "I would lower the barometer by a string and measure the string."—*Everybody's*.

GRAPHITE AND WATER FOR LUBRICATING MARINE ENGINE CYLINDERS

The March issue of the *International Marine Engineering*, has quite an interesting article by Lieut. John Halligan, Jr., U. S. N., describing recent tests made on the steam yacht "Idalia." These tests were conducted chiefly to determine the comparative consumption of saturated steam and superheated steam. The whole report of the tests makes interesting reading, but what we especially call to attention concerns the lubrication of marine cylinders. On this point the report reads: "The only lubricant used in the main and auxiliary steam cylinders is fine graphite mixed with water."

As all marine engineers know, it is desirable to dispense with cylinder oil on shipboard, but it is no doubt a fact that some efficiency is sacrificed as a result. The use of Dixon's Flake Graphite will obviate this sacrificing of efficiency, and in this way make the absence of cylinder oil unnoticed. At the same time no deleterious action in the boilers will follow the use of graphite in the cylinders.

DIXON'S PAINT IN SPAIN

An old time customer of the Dixon Company, from whom we have not heard in a number of years, wrote us the other day with reference to our paint, which he has used very satisfactorily. We are led to infer that the last Dixon Paint used by our customer has given a service of ten years, and while this statement is not definitely made, we should not at all be surprised if such were the case. We reproduce the letter.

Calle Vapor del Fil. 1,
San Andres de Palomar,
BARCELONA, Spain, F. 3-10.

Joseph Dixon Crucible Company.

GENTLEMEN:—Can your graphite be obtained in Spain? If so, who are your agents.

About ten years ago I used graphite paint for hot surfaces such as smoke box doors and boiler fronts, and liked it. Do you still make it?

Send me your literature as per enclosed advertisement.

Does your graphite have any deleterious effect on surface condenser tubes?

And oblige,

Yours faithfully,

(Signed) W. DICK MACLEAN, M. I. E. S. S.

You apply the graphite, graphite does the rest (Dixon's Flake Graphite, of course.)

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

OFFICERS:

President—GEORGE T. SMITH
Vice Pres. & Counsel—WILLIAM H. CORBIN
Treasurer—GEORGE E. LONG
Secretary—HARRY DAILEY
Ass't Treas. & Ass't Sec'y—J. H. SCHERMERHORN

DIRECTORS:

GEORGE T. SMITH	WILLIAM H. CORBIN
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WILLIAM G. BUMSTED	

OFFICES AND SALESROOMS:

NEW YORK SALESROOM, 68 Reade Street.
 PHILADELPHIA SALESROOM, 1020 Arch Street.
 SAN FRANCISCO SALESROOM, 145 Second Street.
 CHICAGO OFFICE, 1324 Monadnock Block.
 BOSTON OFFICE, 648 John Hancock Building.
 PITTSBURG OFFICE, Wabash Terminal Building.
 ST. LOUIS OFFICE, 501 Victoria Building.
 WASHINGTON, D. C., OFFICE, 1410 H Street, N. W.
 BALTIMORE OFFICE, 1005 Union Trust Building.
 BUFFALO OFFICE, 72 Erie County Savings Bank Building.
 ATLANTA OFFICE, Fourth National Bank Building.

DIXON CRUCIBLE COMPANY MEETING

Old Board of Directors and Officers Re-elected

At the annual meeting of the stockholders of the Joseph Dixon Crucible Company, the old board consisting of Geo. T. Smith, William Murray, William H. Corbin, Edward L. Young, Geo. E. Long, William G. Bumsted and Harry Dailey, was unanimously re-elected. The board of directors re-elected the former officers, namely, Geo. T. Smith, president; William H. Corbin, vice president; Geo. E. Long, treasurer; Harry Dailey, secretary. William H. Corbin was also re-elected as counsel.

The stockholders present expressed themselves as thoroughly satisfied with the management of the company by its officers.

Of the total number, 10,000 shares, there were represented 8,856 shares.

"THE BEST ADVERTISED PENCIL MAN IN THE WEST, IF NOT IN THE ENTIRE COUNTRY"

Mr. Evan Johnson, President of the Office Appliance Company, Chicago, says, "I want to say incidentally that Sam Mayer is probably the best advertised pencil man in the West, if not in the entire country. There is no doubt in my mind that this has helped Sam to sell some goods. It has a tangible value for the Joseph Dixon Crucible Company. There are perhaps twenty or thirty salesmen in the stationery field who stand out above the other boys solely because of the personal advertising they receive. I think the trade paper is one of the strong factors in giving them this advantage."



The above bears out our own ideas of what should be considered a part of the duty of a salesman to himself and to his house—especially to himself.

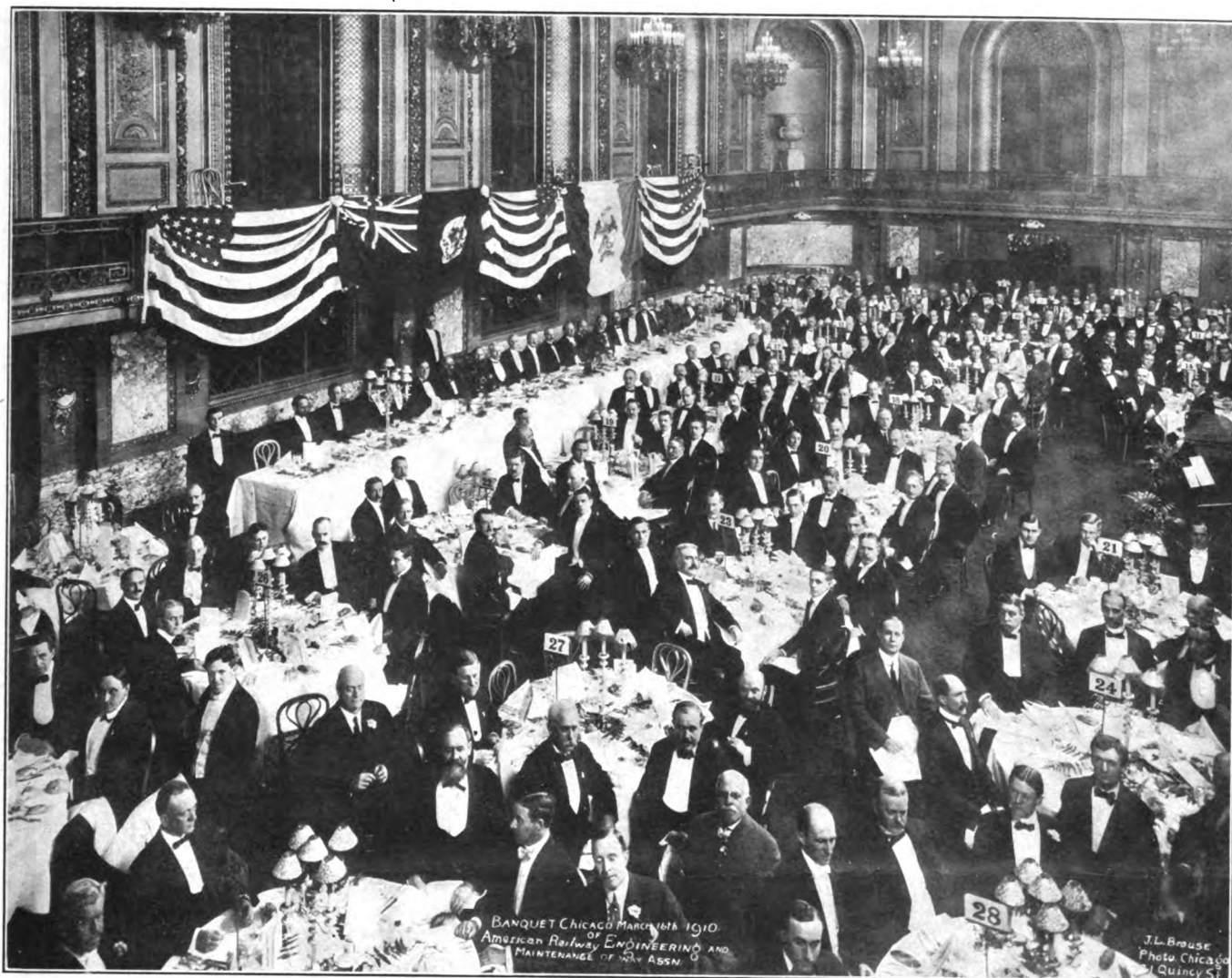
A man who has kept his eye on such matters and the result, said: "If I were a salesman I would take a personal interest in every trade paper in my line. I would know the editor personally. I would make it my business to send him little items of interest that would be of value to his paper. I would try and get acquainted with every one of his local representatives in the territory where I traveled. I would try and make them like me for the really likeable things about me, not because I gave them dinners or cigars or drinks. I believe they would frequently make mention of me and that would be not only good for me, but good for my house."

DIXON'S CUP GREASE BEST EVER USED

The following interesting communication comes to us from one of our representatives.

"I sold McCrillis, Handle Co., Norfolk, O., last year No. 3 Cup Grease as a trial order. They have just sent another direct order, as this is the best grease they have ever used."

Don't swear—use Dixon's Flake Graphite.



CONVENTION OF THE A. R. E. AND M. OF W. ASSOCIATION

The Eleventh Annual Convention of the American Railway Engineering and Maintenance of Way Association was held in Chicago, March 14 to 19, and proved not only to be very enjoyable, but notably successful.

The Dixon Company was represented at this convention by Mr. H. W. Chase of the Home Office, who looks after the Dixon railroad work in the Eastern Territory, and Mr. E. R. Smith of the Chicago Office, who has charge of the railroad work in the Western Territory.

Both the Dixon representatives report a most satisfactory and increasing interest regarding Dixon's Silica-Graphite Paint. This interest was evinced by many of the engineers of maintenance of way and signal work, connected with the most prominent railroads of this country, many of whom have had it literally demonstrated (by extensive and satisfactory tests), that Dixon's Silica-Graphite Paint is a positive and lasting resistant of brine drippings and acids.

The photograph shown above was taken at the annual banquet, always an important feature of the convention, which was held in the Gold Room of the Congress Hotel Annex, Chicago, on the evening of March 16. The speakers were Hon. George P. Graham, Minister of Railways and Canals in the Cabinet of the Dominion of Canada; Dr. Harry Pratt Judson, President University of Chicago; Hon. Milton

J. Foreman, Member, City Council of Chicago; Ralph M. Shaw, Esq., Attorney-at-Law, Chicago; and A. H. Rudd, Signal Engineer, Pennsylvania Railroad, whose last speech of the evening thoroughly fulfilled the expectations of his many friends who had anticipated a witty, eloquent and graceful speech, and they certainly were not disappointed.

THE CLINCHING ARGUMENT

A young man, representing a well-known make of motor car, had called, discussed intelligently the points of the automobile he was endeavoring to sell, had given a flawless demonstration—

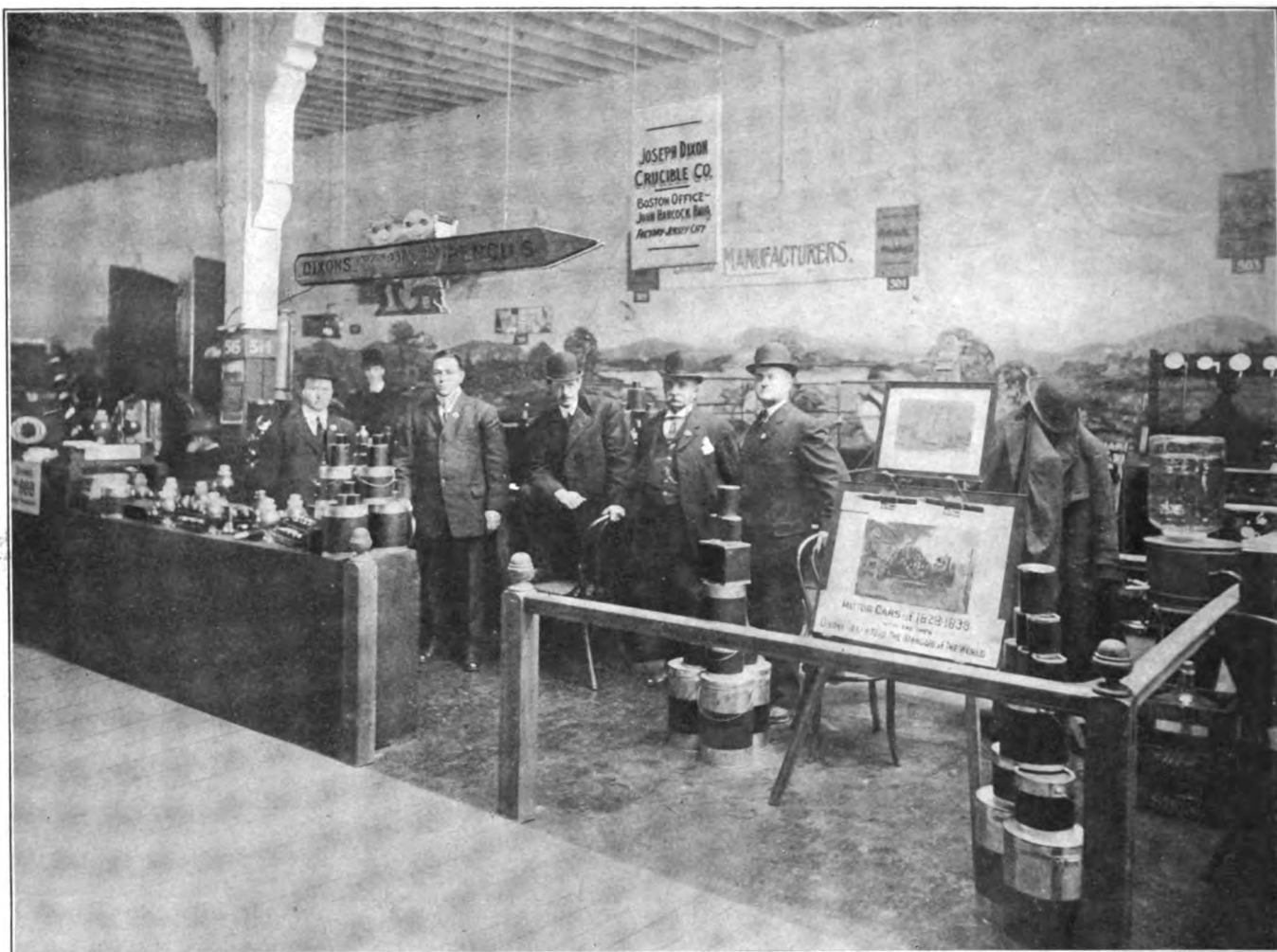
But the prospective amateur motorist, before mortgaging his house, still wanted to be thoroughly convinced and so he said: "What you say about your car may be all right. The engine runs very nicely and it looks good to me; but tell me one thing—have you ever sold any of these cars to *your* own personal friends?"

The salesman smiled. "Have I! Why, three months ago I was engaged to a girl, and I sold one of these identical cars to my prospective father-in-law."

"Did you marry the girl?"

"Yes, indeed. I've now got the girl, a contented father-in-law, and an enthusiastic customer as well."

He made the sale.—*Life*.



DIXON AT THE AUTO SHOWS

The Dixon booth is a standard feature of all the leading automobile exhibits. We were represented at both the New York shows, Chicago and Boston, as well as at the first Atlanta show. Mr. H. A. Nealley, Manager of the Dixon Boston Office, sent us the following description of the Boston show:

"The accompanying illustration shows the Dixon Exhibit at the Eighth Annual Boston Automobile Show, held at Mechanics Building, Boston, Mass., March 5 to 12.

"During the week, the Dixon representatives were kept busy giving special attention to the calls of thousands of people interested in automobile lubrication.

"Samples and Dixon's interesting literature were distributed, and visitors had an opportunity to see the excellent lubricating qualities of Dixon's Gear Grease as demonstrated in the gear cases loaned by the Autocar Company for this purpose.

"Occupying a conspicuous place above the exhibit, was an electric sign, an exact reproduction on a large scale of the Dixon "Brownie" pencil sign. A flash attachment caused the "Brownie" eyes to move from side to side, attracting the eyes and admiration of the thousands present. High pyramids of Dixon lubricant cans gave an effective touch of color. On an easel were two pictures, old English prints, of automobiles of 1828 and 1833, attached to which was the following sign:

MOTOR CARS OF 1828 AND 1833
NOW, AS THEN, DIXON'S GRAPHITE IS THE STANDARD OF
THE WORLD

"On the counters were attractively arranged samples of Dixon lubricants and literature in reference to lubricants and lubrication."

HOLY MOSES

By Egypt's banks, contagious to the Nile,
King Pharaoh's daughter went to bath in style;
She shed her duds, and had a pleasant swim,
Then ran along the shore to dry her skin,
(For towels in them days were not invented,
And with an annual bath were folks contended.)
Disporting 'mong the rushes, thick and thin,
She found the basket which the child lay in.
She drew the ark and child out from the water—
Inspection showed the kid was not a daughter—
Then to her maids she said in accents mild,
"Which of yez ladies is it owns the child?"
'Tis none of yours, ye all are quick to say;
I doubt your word; I've known yez many a day;
But since he have a nose like Hebrew noses,
Bedad, he shall be christened Holy Moses.

—New York Times.

THE caps of automobile radiators occasionally stick owing to the expansion of the threaded rings on which they screw. They will unscrew far more easily if the threads are coated with graphite to which a very little oil is added.

WHY IS ADVERTISING?

The Relation of Advertising and Salesmanship

By H. S. SNYDER

In modern business advertising and salesmanship go hand in hand and are intimately connected. In fact, advertising is a form of salesmanship and salesmanship a form of advertising, since the advertising makes sales, and the salesman helps to advertise the article by bringing it to the attention of those to whom he sells or tries to sell.

Advertising is an impersonal projection of the personal salesman, but it can also be made to come more frequently and persistently to the attention of a difficult prospect than can the salesman. In such instances it is, in addition, more tactful, since it may constantly try to persuade the prospect without begetting antagonism inseparable from too much persistency on the part of an individual. Also it works more subtly, the prospect in many cases being unconscious of the actual influence the advertisement is exerting, and finally yielding to it without realizing that he has been persuaded largely, or entirely, by the advertisement.

The unconscious influence that advertising exerts is one entirely lost sight of by those who view advertising superficially. There are probably thousands of buyers, for instance, of Ivory Soap, who do not realize that the reputation advertising has given this product has finally been accepted by them purely on advertising evidence.

The manufacturer who does not sell direct cannot absolutely know how much value may be attributed to his advertising. In cases of this kind, the advertising acts after the manner of a fertilizer, making it easier for the salesman to reap his harvest and increasing the harvest's abundance and value. Can there be any doubt in anyone's mind as to the respective task of two salesmen, one of whom is selling Ivory Soap, while the other is selling Blanc's? Suppose you, for instance, were compelled to go on the road and sell some soap product, would you select Ivory or Blanc's?

In this connection it is interesting to note the National Biscuit Company. Here is a concern who in a comparatively short time forced their goods into demand, and it is stated that dealers generally are not favorable to their product, due probably to a somewhat narrower margin of profit than is possible on competing products. The ultimate consumer demands the National product, and this demand has been created only by advertising. Naturally, is it impossible to reach the consumer with salesmen personally, the dealer has been against the product rather than for it, and yet in spite of these things the advertising has won out.

It is also interesting to observe the advertising of concerns that are considered to have a monopoly of the market. The Standard Oil Company; the American Telephone and Telegraph Company; the American Tobacco Company; all of these concerns are big advertisers, and are backed by the shrewdest business brains that the world has yet produced. Who sets his judgment against these should certainly be sure of his ground.

Those of us who are old enough to remember a decade or so back, may recall St. Jacob's Oil, a well advertised product in wide use at that time. A recent article in *Printer's Ink* tells us that after the death of the proprietor of this product,

his widow called in a banker who regarded advertising as an expense pure and simple. He went over the books and figured that profits might have been materially increased if there had been no charges on the ledger for advertising. In order that this expense might be cut off, he discontinued advertising as soon as contracts ran out. At this time St. Jacob's Oil had a splendid distribution. The banker said it would sell anyhow, but unfortunately his opinion had been based on a lack of knowledge, and in the course of a few years St. Jacob's Oil became almost less than a memory. It was just at this psychological moment that the Omega Oil came into prominence, and though handicapped as every new product is against an established one, it won out through the assistance of advertising, while St. Jacob's Oil died because advertising was taken from it.

The value of advertising is demonstrated by instances of this kind, but it requires chiefly an intelligent faith. The mail-order advertisers can tell you exactly what their advertising is worth to them. The department stores can tell you how sales result from particular announcements on special products. But the general manufacturer must "sense" the value of his advertising to the concern and except in isolated instances cannot know precisely what this value is. This use of a "sixth sense" is not merely for judging advertising, however. It is exactly this "sense" that is used in judging the value of the office force from the office boy to the general manager. Imagine how many general managers would keep their jobs if it were necessary for them to demonstrate absolutely how much profit they, as individuals, were producing for their concerns.

Other things being equal, the difference between advertising and not advertising, is the difference between Omega Oil and St. Jacob's Oil. We all know well the story of the man who figured up how much he could save by feeding his horse on sawdust instead of oats; gradually he reduced the proportion of oats until he had gotten it down to all sawdust, but it was just at this juncture that the horse died.

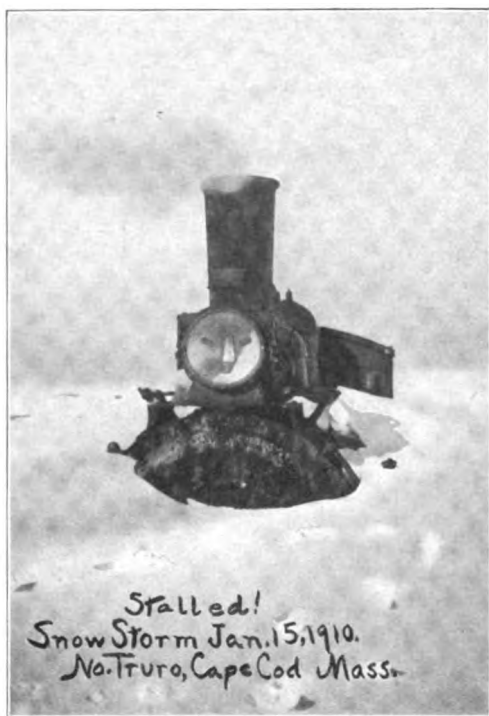
THE WIND AROUND THE EAVES

I love to watch the billows leap
And see their white foam pour,
As they break upon the shining sands
That girts old ocean's shore,
And I love to list' the wind that weaves
Its eerie song around the eaves.

It brings the scent of new mown hay
The odor of pines from far off hills,
It comes from the woods where mosses grey
Cling to the rocks 'mong tinkling rills,
And its cool breath stirs the ivy leaves,
As it winds its way around the eaves.

When winter comes with sleet and rain,
Round rayless suns and sullen skies,
When frost lies thick upon the pane,
I lie 'till sleep shuts down my eyes,
And listen to the wind that grieves,
And sobbing creeps around the eaves.

—LUCY M. STOCKING.



RAILROADING UNDER DIFFICULTIES

The above picture shows one of the locomotives belonging to the New York, New Haven & Hartford Railroad—more accurately it shows such portion of the locomotive as extends out of a snow drift. This photograph was taken last January.

The view gives some idea of the difficulties that are sometimes encountered "down east" in keeping trains on schedule. It also indicates what Dixon's Silica-Graphite Paint is "up against" in protecting steel structures of various kinds in our New England territory.

By the way, Dixon's Paint is on the front of the "submerged" engine shown in the picture.

WILLIMANTIC, CONN., March 11, 1910.

Joseph Dixon Crucible Company.

GENTLEMEN:—I have been receiving your paper GRAPHITE for a considerable time back. It is a grand, good little paper, and I should miss it very much were it discontinued. It is a practical little paper and helps me in my work very much.

I am engineer in an electric lighting and power plant, and Dixon's Graphite plays an important part with us in and around our engines and dynamos. I cannot praise it too highly.

Respectfully yours,
(Signed) BURTON A. CLOUGH.

"THERE IS A REASON"

We frequently hear someone say, "the Jews are getting control of all our lines of business."

A certain drug store advertises to sharpen safety razor blades and we go in with a couple of dozen dull blades. A young man stands behind a desk so absorbed in something that he doesn't even raise his head. We say, "here are some safety blades we would like sharpened." "Put your name on 'em," we are told. We draw the young man's attention

to the fact that the blades are in a small black box and that there is no way for us to do it. The young man opens a drawer and throws out an envelope with the remark, "you will find pen and ink over there," indicating with a jerk of his thumb some other part of the store. His manner in every respect is disagreeable and we no longer wonder that we found the store empty of customers; and with the remark, "young man, you don't seem to care much for business," we return the package of blades to our pocket and leave.

We go over the street to a men's furnishing store kept by a Jew. There were a number of customers in there, but in a moment a young man came up with the remark, "What can I do for you?" and the following conversation ensued.

Customer: "I want some collars like this one."

Young Man (taking collar in his hand): "We have none like this, but I can get them for you. They will cost you \$1.50 per box of a dozen." (Lays the collar back of the counter and picks up paper and pencil). "Will you kindly let me have your name and address and I will have the collars sent you and you pay on delivery."

In the first place, that young man made sure of the collar by placing it back of him, but there was no disposition on the part of the customer to retain it, he was satisfied with the young man's manner and price for the collars. The name and address were given and a pleased customer walked out with a "Thank you, call again!" from the aforesaid young man, and in due time received the collars as promised.

There is certainly a reason why some people do business and others drag along or bust.

4,000 MILES ON DIXON'S AXLE GREASE

A very pleasing letter comes through our Boston Office from one of Dixon's customers in their territory, portion of which runs as follows:

"I have used and sold your Everlasting Axle Grease for a number of years, and I believe it cannot be beat. One pound ran 4,000 miles on my wagon. How is that?"

This is pretty good, we think, though Dixon's Graphite Axle Grease has made a number of records in "endurance tests." It is very true that this axle grease cannot be beat, simply for the reason that the base of this grease is Dixon's Ticonderoga Flake Graphite, the very finest lubricating graphite the world supplies. This is the component that cannot be duplicated in any other grease regardless of price.

TRENTON, N. J., Feb. 4, 1910.

Joseph Dixon Crucible Company.

GENTLEMEN:—I would like to have your latest edition of "Graphite as a Lubricant," as you state it is an improvement over previous editions.

I want to thank you for GRAPHITE and wish to say that it is a very good little publication, full of good, interesting reading as well as "pointers" on the use of your products.

I am now using your flake graphite paint, pencils, and more recently graphite brushes on a dynamo, all of which are equally satisfactory. The flake, however, being used the most.

Very truly,



**NORTHAMPTON NATIONAL BANK BUILDING,
EASTON, PA.**

The above photograph shows the recently finished building of the Northampton National Bank at Easton, Pa. As will be seen from the photograph, this is a very modern and handsome structure, quite following the architectural lines of its larger prototypes which have become conspicuous features in our bigger cities.

Mr. A. A. Richter of Lebanon, Pa., was the architect for this building, and it is through his courtesy that we secured the photograph. The general contractors were Geo. W. Beard & Company of Reading, Pa. The Iron Contractors were the American Bridge Company.

A structure of this character naturally demanded the best material throughout, and so Dixon's Silica-Graphite Paint was selected for the steelwork, three coats being applied.

IF A MAN is known by the company he keeps, so is a concern known by the salesman they send out. The salesman is the connecting link between the concern and the customer. The salesman is the only human part of the concern the customer ever sees or knows of, and the salesman must be a credit to the house he represents or he will discredit it. The salesman should fully and thoroughly represent the methods and policies of his house as well as the goods. The salesmen sent out by the great houses of England and Germany have been specially strong in this direction.

A LUBRICANT THAT LUBRICATES IN SPITE OF HEAT OR COLD

Bearings That "Squeal" for Oil But do Not Cut

A lubricant may sometimes fail to act as a lubricant. The failure may be due to excessive heat or excessive cold, or some stoppage somewhere which prevents the lubricant from reaching the point desired. Experienced engineers have many tales to tell of how oils and greases have failed to perform their duties as lubricants. At all such times it is the bearings that have been treated with flake graphite that are able to endure until the oil or grease can be made to reach them. Such bearings may "squeal" for oil and give good warning of the need of oil, but they will not cut or "seize." Dixon's Flake Graphite is a lubricant that lubricates in spite of heat or cold.

March 1, 1910.

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

DEAR SIRs:—

Please send me a free copy of "Graphite as a Lubricant," Eleventh Edition. I have been using your graphite for a long time and have found it was just the thing to use. When any and all other forms of lubrication fail it has given perfect satisfaction wherever used. I am the chief engineer on the U. S. Tow Boat———. There is installed two tandem compound engines with 5" stroke. They are very hard to lubricate and keep from groaning, but graphite does it all. I have recommended it to all my brother engineers and they are using it.

Yours very truly,
(Signed) GEO. V. OVOITTE, Chief Eng.,
c/o U. S. Tow Boat ———.

HOW GIRLS SHARPEN PENCILS

Recently GRAPHITE printed an article on sharpening pencils that pointed out how man's characteristics might be judged by the manner he sharpened a lead pencil, whereupon we received a letter from Mr. Dudley T. Fisher of Columbus, which runs as follows:

"Referring to the article in your issue of March, 1910, headed "Don't marry a man until you have seen him sharpen a pencil," would like to ask the writer of the article if he can inform me as to the inferences to be drawn from a woman's method of sharpening a lead pencil? Without any disrespect to my better half, I must say that I never saw anybody sharpen a lead pencil as badly as she does. Her usual implement is a pair of scissors, and there are generally sundry infantiles urging speed in the operation.

"It is too late for this information to do me any good, but it may help the rising generation."

We promptly acknowledge our inability to give our correspondent the information he desires. On the general theory of feminine inconsistency, we might venture to guess that good housewives are in inverse ratio to their pencil sharpening abilities. If there are any readers of GRAPHITE who feel competent to throw some light on the subject, we shall be glad to have them step forward.

FOSSILIZED CORN

In an Antediluvian Cornfield

Readers of GRAPHITE from time to time have opportunities of reading interesting letters which the Dixon Company receive from unexpected quarters, and concerning interesting matters sometimes touching closely, and at other times touching remotely, on the subject of graphite. The following is part of a letter received from a correspondent in Norristown, Pa.

"On the 21st day of September, 1893, while I was geologizing in a field near Norristown, I discovered fossilized Indian corn. I brought home one rock and it has at least a quarter peck of ears of corn in it, the grains radiating from the cob being perfect rock crystals.

"To prove clearly that it was corn, the fossilized corn is embedded in the top of the rock, which rock is now limestone formed from carbonate of lime that was being soaked out of the soil and drifting over the surface of the earth during the deluge which Moses speaks of in Genesis.

"At a subsequent visit to that antediluvian cornfield, I picked up a rock with a fossil corncob in it, which projects about three eighths of an inch above the face of the rock.

"It is particularly noticeable that there are a number of pockets in the rock first named, which have rock crystals in them projecting perpendicular from the plane of projection, the same as a drop of perspiration on your forehead.

"We know that Indian corn is of less specific gravity than water, hence it composes the upper portion of the rock. Moses also tells us that it was on the 17th day of the second month that Noah entered the ark, which was the 17th day of November as we know it, because the Jews reckon October the first month in their year, when the rain descended and the flood came. I have walked over about three acres which bears strong evidence of an antediluvian cornfield.

"Now in solving the mystery of impurities in plumbago, or graphite, as it is called, we have only to decide that the world was destroyed by water and that it was never restored to its original beauty and fertility. This carbonate of lime which was soaked out of the earth, which formed its natural fertilizer, is now found as slate in coal and graphite. In every instance we find it had silica diffused through it. If you go into the Mammoth Cave of Kentucky today you will find liquid silica yet dripping from the stalactites which depend from the arch ceiling overhead and forming stalagmites on the floor of the cave. The earth was only 1656 years old when it was destroyed by water, mineral substances were not yet crystalized as they are now. It is also known that rain water is a powerful solvent. Its action liberated the silica from the carbonate of lime and we now find small pockets through the limestone with rock crystals in them formed from silica, which was held in solution, forming small pools through the carbonate of lime which was a pasty substance like mortar. During the flood, when it crystalized, a shrinkage took place, and a contraction of the liquid took place, hence we now find the silica in those pockets like crystalized alum.

"Graphite from coal regions frequently contains slate. Graphite from Michigan is largely made up of slate. That mined in Ticonderoga, N. Y., contains no slate whatever, but but does contain silica, while graphite from other parts contains calcite.

"It must be observed that calcite is a general term under which are comprised the different varieties of carbonate of lime, hence it may be classed as slate.

"When we go into the coal fields we find ferns and different kinds of organic matter embedded in the slate, but none in the coal, thus proving that the carbonate of lime was soft in a pasty slush like our calcined plaster would now be found if it were wet, just inclined to receive ferns or like delicate vegetation, and when crystalized hold an exact impress.

"It may be further observed that the silica thus liberated from the carbonate of lime has diffused itself through the coal, giving it that glassy appearance and causing a conchoidal fracture like glass; the vegetation forming the coal has turned black from the presence of sulphur. Bituminous coal has been formed of timber of an oleaginous character like turpentine, which greasy substance refused to assimilate with the oxygen or rain water that fell on the surface and percolated through it.

"When we come to the graphite in Ceylon we find it entirely free from either silica or slate, which is satisfactory evidence that if there ever was carbonate of lime diffused through the soil there, that it was all swept into the Indian Ocean during the deluge.

"A great portion of the Island of Ceylon lies low and the carbonate of lime might easily have been carried into the ocean, thus affording a graphite today free from either silica or slate, for where we find the one the other abounds also."

ELLISON & SIDES,

MARINE ENGINES, LAUNCHES AND ROW BOATS

Penrose Ferry Bridge,

PHILADELPHIA, PA., March 22, 1910.

Joseph Dixon Crucible Company,

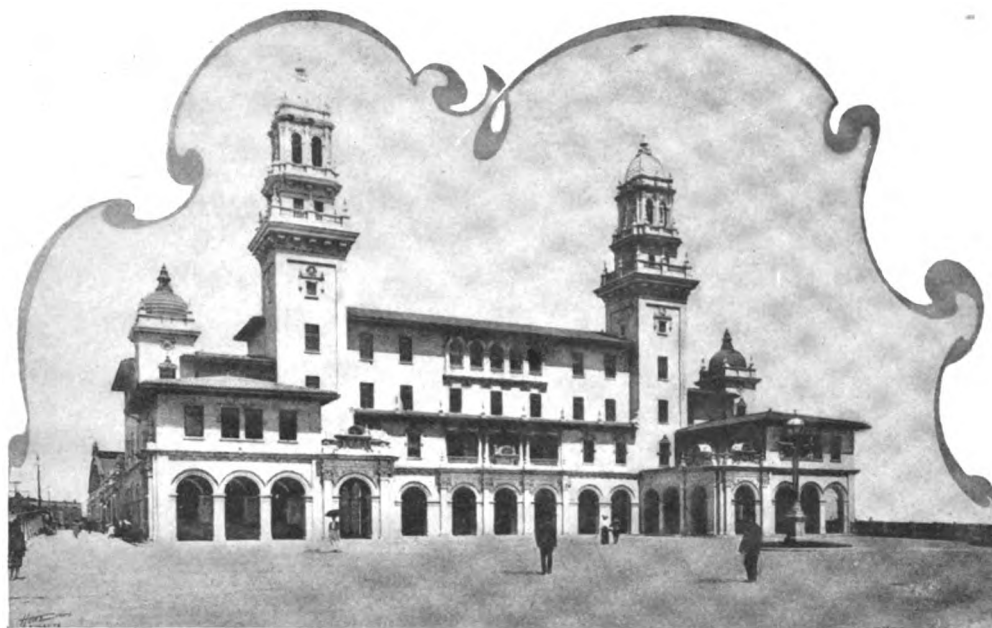
Philadelphia, Penna.

GENTLEMEN:—

It gives me pleasure to recommend your pot lead for yacht bottoms. We own the fast and well-known cruiser, "The Jennie C. Sides of Phila." Four years ago, when new, we painted her bottom with copper paint and during that season, her best speed was a scant ten miles per hour. The following spring, we purchased two pounds of your pot lead. We dissolved 1½ pounds of dry shellac in ¾ gallon of denatured alcohol, adding the pot lead to the consistency of paint (not thick), applying it slowly, followed by my partner with a powder gun (such as is used for distributing insect powder), blowing on the surface dry pot lead, and later on going over the entire surface with a dry cloth, resulting in a highly polished bottom, free from any friction whatever. On our trials, we found our increase of speed to be 1¼ miles per hour. We have remarkable speed with our horsepower and we attribute it largely to your pot lead. I would advise any owner of a motor boat who would like to have more speed, to put on Dixon's Pot Lead, and he will find it a paying investment. Our first bottom of pot lead has lasted in good condition for two seasons, and now we are going to put on a new coating for the coming season.

Respectfully yours,

(Signed) W. H. ELLISON.



ATLANTA UNION TERMINAL

This structure is being repainted with Dixon's Silica-Graphite Paint after the same material has given a service of five years.

Naturally the conditions that Dixon's Paint has withstood successfully for so long a period are very severe due to the sulphurous gases escaping from the locomotives that constantly occupy the terminal.

THE WOMAN WHO WORKS

I know a young woman—distant relative of mine—works downtown somewhere; not so very pretty, but if you knew her well you would see that she is pure gold as to character; fair education, and a good heart, but just ordinary ability. Some such woman as the mother of many a self-made man was at her age. She'll probably be some one's wife and some one's mother herself some day. A little human kindness, a little patience in explaining things, would make a great difference with her later. You might look out for her—she's probably working in one of your departments.

They even say that it pays—those who have tried it. Get better work out of them, and all that.—*Batten's Wedge*.

THE LEASEBREAKERS

Broadway has a society known as the Leasebreakers, made up of men and women well known along that thoroughfare. When a member of the society, or a friend of a member, wants to move and cannot get rid of his lease, he gives a party and invites the Leasebreakers. They come and stay for four or five hours, and next morning there is a general complaint from all the other tenants of the building, and before nine o'clock the landlord comes around and serves a dispossession notice on the man who wants his lease broken, alleging he cannot have such carryings-on in his place.

There is a near-Bohemian in New York who wants very much to be a real Bohemian. He has a knack for fixing up an apartment. After a long search he found some rooms that exactly suited him and he spent two whole years in getting just the right furniture, in selecting the proper hangings, in

tearing out partitions and rebuilding rooms until he had a perfect jewel-box of a place. He guarded it jealously until all was ready. Then he sent out invitations to all the Broadway set to come over and help him at his house-warming.

Among those invited were half a dozen members of the Leasebreakers. They thought their host wanted to get rid of his lease. They attended and did their liveliest leasebreaking stunts. It was a great night.

Before nine o'clock the next morning, the near-Bohemian was notified to get out.—*Saturday Evening Post*.

NOT AN ARISTOCRAT

During the French Revolution a thief and a Marquis jolted in a tumbril side by side through the wild streets of Paris on the way to the guillotine, while a venerable priest tried to console their terrible last ride with moral reflections.

"A bas la noblesse! Down with the aristocrats!" shouted the red-capped mob.

Thereupon the thief rose in the cart and cried:

"My friends, you deceive yourselves. I am not an aristocrat. I am a thief."

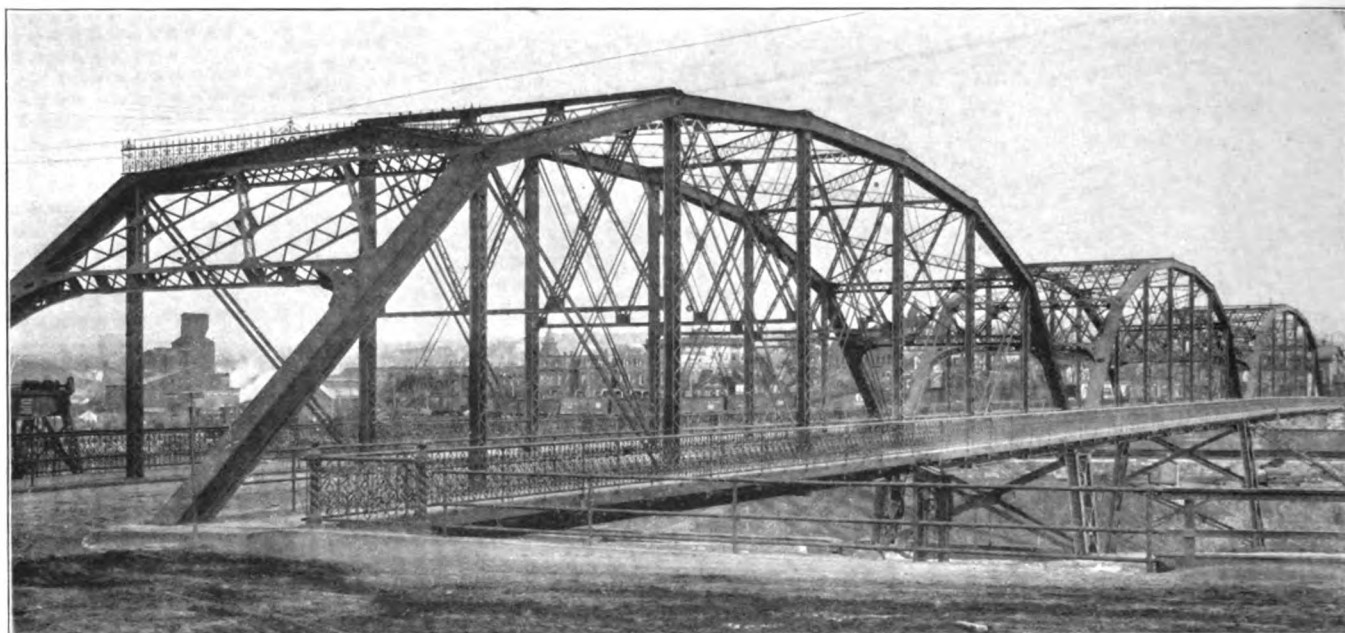
The priest plucked him by the sleeve, saying reproachfully:

"Sit down. This is no time for vanity."—*Exchange*.

WHAT MYSTERIOUS NOISES MEAN

Mysterious noises emanating from the running gear of a car, usually denote a want of lubrication in the springs or universal joints. When the springs require lubrication, and no grease channels are provided, the frame should be jacked up to remove the weight from the leaves, and grease introduced between them by means of a knife blade. Oil also should be used, as it will penetrate into inaccessible crevices and is not liable to be forced out between the leaves, when the weight of the car is placed on the springs. In all well designed cars, provision is made for lubricating the universal joints and where grease cups are employed they should be so fastened as to preclude the possibility of their becoming lost, through the action of centrifugal force.—*Motor World*.

If the oils or greases used contain Dixon's Motor Graphite, better and more lasting lubrication will be obtained.



LINDEN STREET BRIDGE OF SCRANTON, PA.

This Structure was Painted Over Two Years Ago with Dixon's Silica-Graphite Paint, and it is Now Reported to be in Excellent Condition and Good for Several Years More.

"STOP, LOOK AND LISTEN"

At their dangerous grade crossings the railroads plant a striking sign board, on which is painted in large letters, "Stop, look, listen." This is a warning for sane and sober persons that there is danger in crossing the tracks, and only the reckless ones fail to take heed.

The time has arrived when all patriotic men and women, particularly those in public life, whose words seem to carry weight with the public, should "stop, look and listen," before agitating for more regulation and investigation of our industries, as we have certainly reached the crossing and there is danger ahead, simply because no heed is taken of the warning signals. Our industries are legislated almost beyond endurance already, and from the rantings of politicians and the agitation kept up by the busybody reformers, the buying public begin to believe that something is amiss, and the result is hoarding money that would be in circulation and making machinery go, if there was not an under-current of uncertainty. There is no especial reason for any fear of the future. Last season's crops were the largest ever, and brought top prices, and next season's will be even larger. Money for proper uses is plentiful and can be borrowed at reasonable rates of interest. Wages are fully as high as manufacturing conditions warrant, but the market does not respond, because the public, the spenders, are uneasy. This causes curtailment, and when the public get a fright they go to extremes of caution, just as they go to the extreme of spending when there are no clouds in sight.

Rest from all agitation is the tonic that will restore the buying public to good health, and until the investigations and restrictive legislation cease, we shall have dull times. There is a surfeit of yellow journalism, and a censorship would be very appropriate at the present time, continued until public confidence is restored, and every man talking "blue" in public places should be fined.

The American public have the money to spend, and the store windows and the counters inside were never more attractive. But there is the unexplained feeling that conditions are not right and luxuries and even necessities are passed by and the money they would cost added to the accumulation in the teapot or in the stockings. Stop this continued agitation and trade would revive like magic and our mills would be overwhelmed with orders, and deliverable orders at that, because there is no accumulation of goods, the manufacturers very wisely curtailing production as business drops off.

The average workman with a full week's pay has a level mind and looks upon the bright side of life. He has no time for discussion of railroad or corporate regulation. He knows that the mill he works for has a pretty good superintendent and a body of fine overseers, and his pay is sure. Perhaps he has two or three relatives at work in the same mill and the combined earnings give all a happy home. But if the mill runs three or four days in the week he has time on his hands and the club or the saloon, perhaps, catches him and here the agitator is getting in the fine work. Before long the former well satisfied operative is ready to strike, not that he has a grievance, but simply on account of the agitators. From Washington to the mill gates in Fall River, Lowell or any other mill town, the agitator is the disturbing factor, and if he will take a vacation for a few months, we will have a normal trade in all lines. If he continues in his present course we will have a panic.—*Fibre and Fabric*.

A SALESMAN anxious to leave town, and leave it on the very first train, hastily called a bellboy and said:

"Bring me a Ballinger."

The boy hurried away only to return and say:

"The bartender never heard of it."

If it isn't Dixon's Flake Graphite, it isn't the best.

LIFE, WHAT'S IT TO YOU?

To the preacher life's a sermon,
To the joker it's a jest;
To the miser life is money,
To the loafer life is rest.

To the lawyer life's a trial,
To the poet life's a song;
To the doctor life's a patient
That needs treatment right along.

To the soldier life's a battle,
To the teacher life's a school;
Life's a good thing to the grafter,
It's a failure to the fool.

To the man upon the engine,
Life's a long and heavy grade,
It's a gamble to the gambler,
To the merchant life is trade.

Life's a picture to the artist,
To the rascal life's a fraud;
Life perhaps is but a burden
To the men beneath the hod.

Life is lovely to the lover,
To the player life's a play,
Life may be a load of trouble
To the man upon the dray.

Life is but a long vacation
To the man who loves his work;
Life's an everlasting effort
To shun duty to the shirk.

To the heaven blest romancer
Life's a story ever new;
Life is what we try to make it—
Brother, what is life to you?

SHINGLES

The *Boston Transcript* makes a good bit of fun at the old time complaint "Shingles," which still seems to exist and which most of us older ones have heard of.

In part the *Transcript* says: Shingles is at large again and you may fall ill of it almost any day, but you had better not, as you could hardly select a less satisfactory distemper. People are not kind to the shingled; instead of sympathizing they jeer at you. The funny name suggests a funny ailment. When it comes your turn to be shingled you will understand. Beneath a mirthful exterior it conceals very unamiable neuralgia. If you can imagine a toothache five-eighths of a yard long and three inches wide—that's shingles. And the neuralgia jumps most acrobatically at about two in the morning. Fine joke, isn't it?

Perhaps you begin to suspect shingles is a less congenial comrade than the facetious would make out. Our advise is, don't get "run down." The minute any one begins to run you down, stop him, for shingles is a cowardly crew; it attacks us not when we are seething with vitality but when we are run down. The scientific name of the disease, at which so

much fun is poked, is *Herpes Zoster*, "a cutaneous disease symptomatic of nervous derangement, in which a vesicular or pustular eruption appears over the course of some nerve; usually extending half round the body like a girdle." The old saying was that when the girdle was completed, that is the ends met, the patient died. We believe the ends never meet.

"THE POINT IS JUST HERE"

On a dismal afternoon, when a number of the members of a well known club were discussing questions of the automobile and motor club, one of the members said, "The point is just here, if I could only impress on every man, woman or child who runs a gasoline engine, the importance of correct lubrication, the percentage of engine difficulties would be decreased at least ninety per cent and the life of an engine would be increased immeasurably. Lack of lubrication is the cause of endless trouble. Lack of knowledge of what the proper lubricant should be—whether oil or grease, and what kind, is also the source of much trouble. A superintendent of motive power on one of the trunk lines of railways once said that fifty-three per cent of train delays was due to deficient lubrication on the locomotive. Anyone who is interested in the subject of lubrication, should send to us for a copy of "Graphite as a Lubricant," eleventh edition.

WHY HE BELIEVED

"Do I believe in the occult? Sure, I do," said the suburbanite as he settled down into his seat in the smoking car and filled his pipe. "I was just as great a skeptic as you are until a week ago. I was firmly convinced that table manipulation was a fake, that mind reading was pure guesswork, and that all alleged psychic phenomena could be attributed to natural causes. But now I'm willing to accept the entire propaganda. Nothing is too obscure for me to accept on blind faith. I've experienced a complete change of heart, as they used to say in the old Methodist camp meetings.

"You see, it was this way. My friend Buggins, who is really a bug on the occult, induced me to go to a seance with him the other afternoon, and prevailed upon me to have a sitting. In spite of my non-belief he said I was a good subject, and I guess I was. The lady who was delivering the soul fluid told me I should have trouble with a stout, dark woman. All the way on the train that evening the idea haunted me. I couldn't get it out of my head.

"And say, she was right. What happened? Why, when I got home, I found myself up against the proposition of firing the colored cook. Sure, I believe in the occult. Got a light?"

—*Exchange.*

THE FATHER OF HIM

Census Taker:—Give the ages of your five children.

Father:—All right. Mary will be thirteen in September—thirteen, yes, that must be right; and John is—John—ahem—he's going on eleven, I guess; then Helen—wait a minute, I never could remember how old she is—but Fred is—Fred is—let me see—and Archie—heavens, man! my wife will be back at half-past five—can't you come again then.

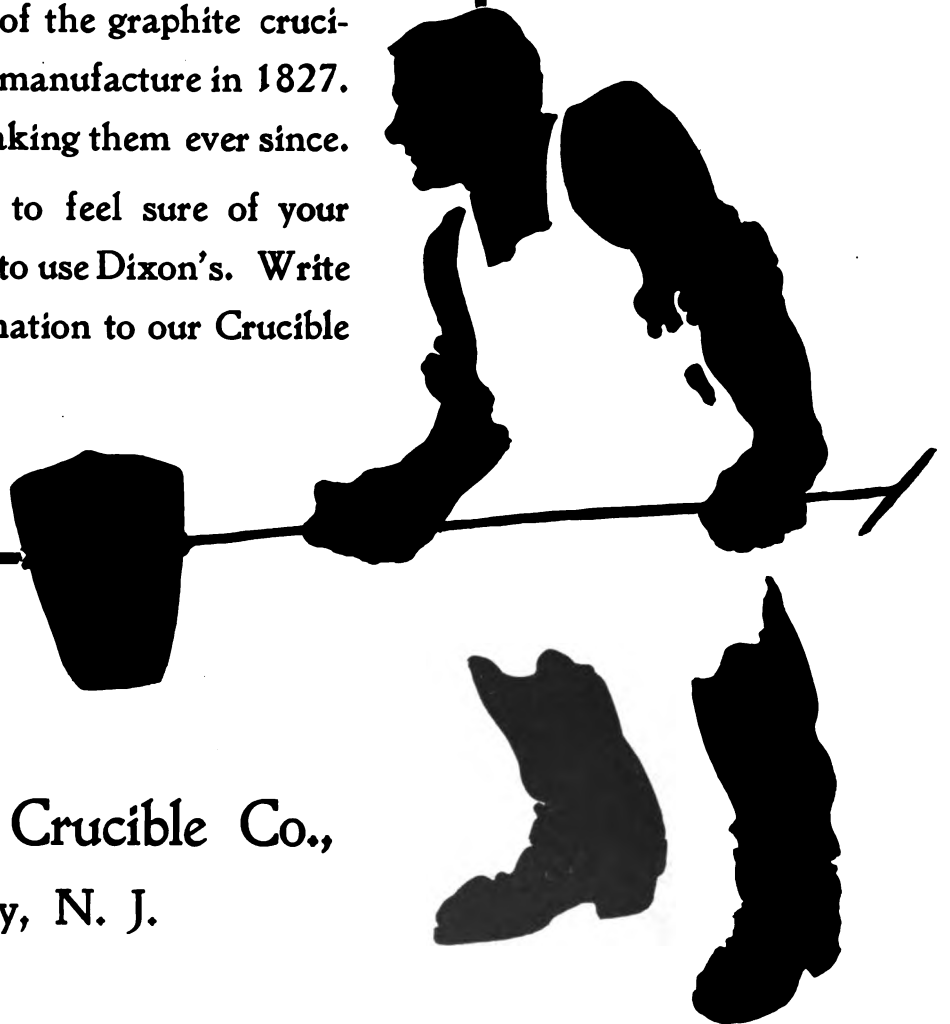
—*Woman's Home Companion.*

Crucible Confidence

Confidence, to be of the right kind, must be properly aged. Other things being equal, it's the man with the biggest and longest experience that is the most dependable—that is worthy of greatest confidence.

As we have told you before, Joseph Dixon (the founder of the company) was the inventor of the graphite crucible and began its manufacture in 1827. We have been making them ever since.

If you want to feel sure of your crucibles, it's best to use Dixon's. Write for further information to our Crucible Department.



Joseph Dixon Crucible Co.,
Jersey City, N. J.

GRAPHITE

VOL. XII.

JUNE, 1910.

No. 6.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regards to the different forms of Graphite and their respective uses.

DRAWING WITH PENCIL AND CRAYON

The School Department of the Joseph Dixon Crucible Company has just gotten out a very handsome little booklet of some twenty-five pages, treating of the use of Dixon's pencils and crayons in school work. Cuts and color plates that are fac-simile reproductions of drawings made with Dixon's pencils and crayons are included, showing the possibilities in this kind of work.

There is reproduced in this booklet an article by a supervisor of drawing (Miss Rachel Weston) that originally appeared in *The School Arts Book*. In this article the writer points out clearly the value of color in reproductive work and the peculiar advantages of the colored crayon over other mediums.

We reproduce here a few paragraphs from the article referred to:

"In our schools the study of color has increased greatly the child's appreciation of the world about him. It has also added to the burden of the grade teacher. To satisfy the craving for work in color, tinted papers are often used for paper cutting and simple designs. The water color in use has its advantages, but the general sloppiness of the medium, as it must be used in the schoolroom with numerous little water cups, paint boxes and brushes, and the minutes required to make ready and tidy up, prevent its being altogether satisfactory.

"In the colored crayon, however, we have a medium as simple as the lead pencil, with the added charm of color. The colors are durable and of great variety—deep reds, soft grays and greens, as well as the most brilliant hues. Those cased in wood are not so easily broken but require sharpening, while others wound in paper are always ready. If held vertically they give a fine, clear line; if used on the side, a flat tone or broad, sketchy line. It is well in selecting colored pencils for school use to choose the very best, for the cheaper grades are apt to crumble, to be gritty, or to give an undesirable waxy look to the drawing. The finer are not only better crayons but last longer, thus costing less in the end."

Any and all who are interested in instructive drawing should write for copy of this new Dixon booklet.

A LETTER FROM A CRUCIBLE CUSTOMER

We have a letter from Columbia, South America, which gives us great pleasure to read, for the reason that the customer in ordering a new lot of crucibles, begins his letter as follows:

"We have been using for some time your well known crucibles and we have noticed a quality far superior to that of any other make. For that reason we give our preference to the Dixon Crucibles and will continue to use your products in our factory.

"We are sending you an order for an additional supply of the same type you sent us last and hope that you will take the same good care in the packing of the shipment in order to avoid breakage."

DIXON'S FLAKE GRAPHITE FOR AIR COMPRESSORS

SANGER, TEXAS, March 31, 1910.

I wish to say that I have now been using Dixon's Flake Graphite in the air cylinder of my compressor for about ten years. About the first of February, 1910, the compressor was sent to the shop for a general overhauling, it not having been generally overhauled since first starting up in May, 1899. Upon examination of the air cylinder, I find the packing rings but little worn, but having a coating of flake graphite, and the inside of cylinder the same, both having a high polish. The cylinder and packing rings seem to be in good condition, and I do not think it will be necessary to remove the cylinder, or renew the packing rings as they do not leak a particle. In all this time I have had no trouble with the discharge valves clogging up with a deposit of carbon.

In the past ten years I have followed the practise of packing the piston rod of the air cylinder, with rings of packing covered with a dope, consisting of good valve oil and Dixon's Flake Graphite. The rod has worn but $\frac{3}{4}$ nd of an inch in that time, and is beautifully polished and true, and without a single score mark.

Can this be duplicated?

(Signed) A. H. GOFF.

THOSE who are looking for excuses for not going to church, may find another one in the statement that one of the favorite breeding places of germs is the church "where the same old air laden with an even richer crop of 'bugs', is reheated and served again Sunday after Sunday." The very same thing is also said of the theater, so if you do not go to church do not go to the theater.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

OFFICERS:

President—GEORGE T. SMITH
Vice Pres. & Counsel—WILLIAM H. CORBIN
Treasurer—GEORGE E. LONG
Secretary—HARRY DAILEY
Ass't Treas. & Ass't Sec'y—J. H. SCHERMERHORN

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NEW YORK SALESROOM, 68 Reade Street.
 PHILADELPHIA SALESROOM, 1020 Arch Street.
 SAN FRANCISCO SALESROOM, 145 Second Street.
 CHICAGO OFFICE, 1324 Monadnock Block.
 BOSTON OFFICE, 648 John Hancock Building.
 PITTSBURG OFFICE, Wabash Terminal Building.
 ST. LOUIS OFFICE, 501 Victoria Building.
 WASHINGTON, D. C., OFFICE, 1410 H Street, N. W.
 BALTIMORE OFFICE, 1005 Union Trust Building.
 BUFFALO OFFICE, 72 Erie County Savings Bank Building.
 ATLANTA OFFICE, Fourth National Bank Building.

A CORRECTION

In order to get the announcement of the Annual Stock Holders' Meeting in the May issue of GRAPHITE, we had to make a rush job of it. In fact, the pages for the May issue had all been made up and it was necessary to drop an item to make room for the announcement of the meeting.

In order to facilitate matters, the notice was made to read the same as that for the previous year with the exception of the number of shares voting, and in our haste we neglected to remember that between the two annual meetings our Mr. J. H. Schermerhorn had been elected Assistant Secretary and Assistant Treasurer; as the result the matter went to press without Mr. Schermerhorn's name. This item notifies our readers of the re-election of our Mr. J. H. Schermerhorn as Assistant Secretary and Assistant Treasurer, and also constitutes our apology to him.

OUR NATIONAL GAME

Baseball seems to be gaining in popularity each year. It is extending in scope and getting a firmer hold on the communities in which it is established. Another confirming sign is shown by the fact that a number of magazines are including articles on this pastime, making them features in the numbers in which the articles occur. We are told that, two years ago, the bankers and brokers remained at their offices watching the tickers after the Stock Exchange closed, following the progress of the Chicago and New York teams who were playing off the tie game that gave the winner the pennant.

The New York Central posted bulletins in the buffet cars and at the stations of the progress of the same historical game. It is without doubt entitled to the term "Our National Game," and we believe that it deserves the title. If you haven't been to a game recently, go to one and see if it doesn't rejuvenate you.

DIXON'S QUARTER CENTURY VETERANS WHO ARE STILL IN THE RING

Alfred Grey began	1868.
A. K. Ingraham	1870.
John Tracy	1874.
Geo. E. Long	1877.
T. B. Valteau	1878.
Geo. B. McLean	1879.
R. Van Dien	1880.
Harry Dailey	1880.
William Koester	1880.
F. Engelbrecht	1882.
John M. Ready	1885.
John H. Baird	1885.
Wm. J. Coane	1885.
P. H. Meyers	1885.

The above represent officers, superintendents, branch managers and salesmen. Among the factory workers there are others who have been with the Dixon Company for many more years.

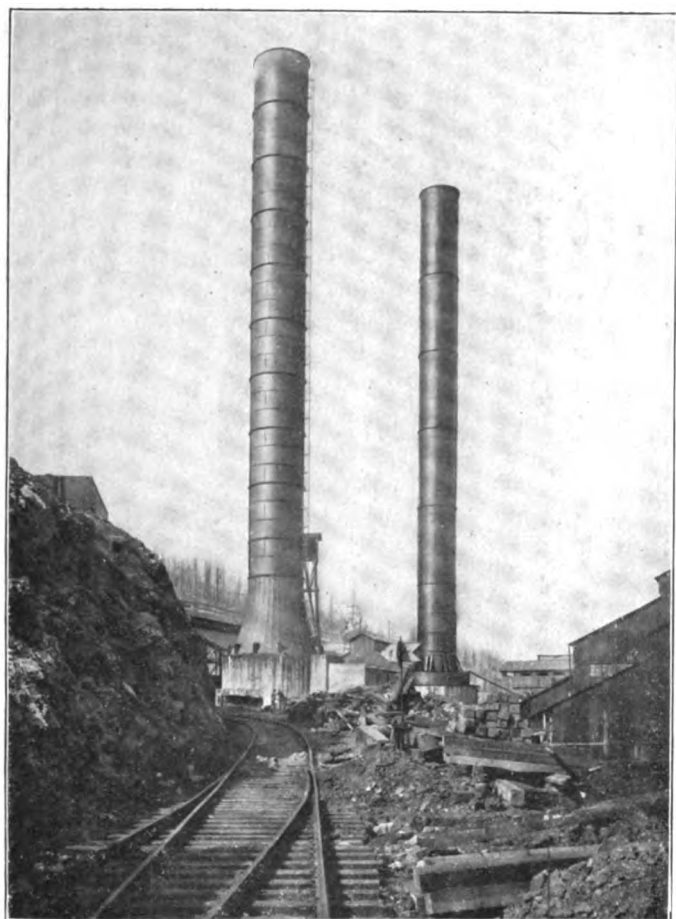
PENN HALL, WILSON COLLEGE CAMPUS,
CHAMBERSBURG, PA.

Joseph Dixon Crucible Company

GENTLEMEN:—Our experience with Penn Hall pencils, which you made us, has been exceedingly satisfactory. A softer wood and tougher lead than we have heretofore had, our girls find them very agreeable to use. They can be sharpened more readily and are far more durable than any I have used. It is very evident in the wear of our machine pencil sharpeners, of which we have two for the girls' use. Before I used up six grinder wheels a year and since your pencils came in, we will replace but three for the year.

Yours truly,

WHAT the use of a good Dixon lead pencil can do is shown by the fact that one prominent citizen of the United States started as a stenographer with a lead pencil and has most successfully and creditably filled three cabinet chairs—George Cortelyou.



DIXON'S PAINT ON STACKS OF MAMMOTH COPPER MINING COMPANY

The above cut is reproduced from a photograph showing the stacks of the Mammoth Copper Mining Company, which were painted with two coats of Dixon's Silica-Graphite Paint inside and out. The painting was done at the time of erection in October, 1907, and we believe that the stacks are still in good condition.

FLORIDA

How many of our readers, when they think of Florida, think of it as larger than the states of New York, New Jersey and Rhode Island added together, or as we are apt to think of Boston and Massachusetts as something in the large class, we will say that Florida is larger than New York and Massachusetts put together.

The Dixon Company own nearly 70,000 acres of cedar wood land in the state of Florida, and its cedar operations extend over an area of many hundreds of miles and include several cedar mills and camps.

Tourists familiar with all of the beautiful resorts on the east coast of Florida, as a rule, are totally ignorant of the great interior of the state and the west coast above Tampa and the nearby resorts.

As an agricultural state Florida is rapidly coming to the front. One can see a single "patch" of cantaloupes covering several hundred acres.

It is said that in point of agricultural advantages, Florida surpasses every state from Maine to Texas, from the Gulf of Mexico to the Great Lakes. Its soil will produce a diversity

of crops astounding in multiplicity. Almost any crop that will grow in any section of the United States, will grow in Florida with proper culture, and there are many crops that thrive in Florida that cannot be produced in any other state. Many that reach a greater perfection of flavor in Florida than anywhere else.

UNION MUTUAL FIRE INSURANCE CO.

B. F. FULLER, Agent, VERSHIRE, VT., April 11, 1910.

Joseph Dixon Crucible Company,

H. A. NEALLEY, Mgr., N. E. Dist.,

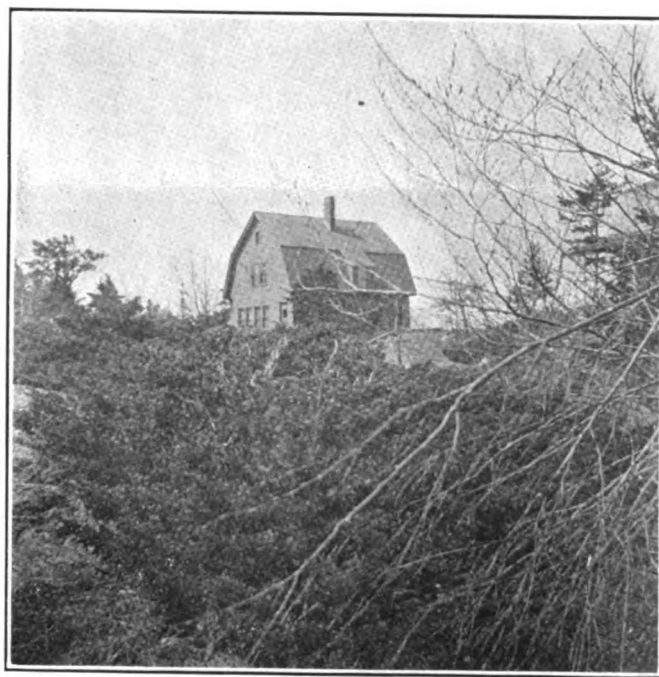
John Hancock Bldg., Boston, Mass.

DEAR SIR:—I enclose herewith three (\$3.00) dollars, for which please send we two (2) gallons Natural Color Dixon's Silica-Graphite Paint. Send the same by express to B. F. Fuller, Vershire, Vermont, via East Thetford, Vt.

I have used your paint several times and find to it be the best paint on the market for protecting the roof on my house which is covered with steel.

Yours very truly,

(Signed) B. F. FULLER.



A COTTAGE ON SHEEPSBOT BAY

The above cut shows a cottage situated on Sheepscot Bay, on the coast of Maine, on which Dixon's Silica-Graphite Paint has given a service of seven years. Dixon's Paint was applied not only to the roof, but to the sides as well, and a recent examination shows the paint to be in excellent condition. Our Boston Office, who has charge of this territory, writes as follows with reference to the matter:

"It is an interesting fact to state that graphite paint was used on the entire building with the exception of the piazza floor, where a lead paint was used. While the parts protected with graphite paint have not required any repainting, the piazza floor has been painted four times during the past seven years."



UNION LEAGUE CLUB OF PHILADELPHIA

The above illustration shows a just-erected addition to one of the old-time landmarks of Philadelphia—the Union League Building. This addition was designed by Mr. Horace Trumbauer, architect, and was erected by James Doak & Company, contractors, at a cost of about \$500,000. The American Bridge Company were the iron contractors, and J. I. Bland & Company (formerly Snyder & Company) the erectors. We might mention here that Dixon's Silica-Graphite Paint preserves the steel frame of the new structure.

The Union League was founded in 1862, in the high-strung days of the early part of the great rebellion; and since that time has been generally conceded to be perhaps the most distinguished and influential club in the country. Its work in saving the Union, for which it was founded, attracted national attention, and after the Civil War was over, and ever since, it has maintained its power and interest in national campaigns. It has probably entertained more distinguished soldiers, seamen, diplomats and scholars of this and other countries, than any other similar organization in America.

The present membership of the Union League is limited to 2590, and there is a waiting list of 2700, and it is hoped that the new addition will permit of the enrollment of about 2000. It seems needless to add that the new structure is absolutely fireproof throughout, and that the entire club house is fitted with every device for the comfort, convenience and pleasure of its members.

NOT HANDSOME, BUT DURABLE

One of the users of Dixon's Flake Graphite compares it with Bat Nelson. Of course, the color question must not be considered, as Bat Nelson would be put down by the census man as "white," while Dixon's Flake Graphite would have to be "negro." Bat Nelson was never considered handsome,

but he was always busy and durable. Many would-be champion light weights, when they got together, were wont to speak of Nelson as something slow as a carthorse and without a punch in either hand, but they usually forgot to mention one thing—that he won all his fights.

Nelson possessed a cast iron jaw and whalebone ribs. When his opponents worked themselves out on his iron jaw, which was always open to assault, and his ribs, which were never protected, then the end came to them. He was durable and outlasted all competitors.

So with Dixon's Flake Graphite. It is not something for the parlor. It is for use and not for beauty. When it is on the job it is always busy and wonderfully durable, outlasting all of its would-be competitors.

Unlike Nelson, age never tells on flake graphite—its jaws are cast iron and its ribs whalebone to the end of its days. It is the champion against friction in all classes, feather weight to heavy weight.

Dixon's Flake Graphite is used with most pleasing results on light bearings and on the most massive bearings of our great industrial engines and machines.

HOW TO TELL STEEL PIPE FROM IRON PIPE

It is so often difficult for users of pipe to distinguish iron pipe from steel that a few hints on the subject may be found helpful. The scale on steel pipe is very light and has the appearance of small blisters or bubbles; the surface underneath being smooth and rather white; on iron pipe the scale is heavy and rough. Steel pipe seldom breaks when flattened, but when it does break the grain is very fine; whereas the fiber of iron is long and when the pipe breaks, as it readily does in the flattening test, the fracture is rough. Steel pipe is soft and tough, says *Domestic Engineering*, and when it is threaded, the threads do not break, but tear off. It requires very sharp dies to cut the threads on steel pipe successfully and a blunt die, which might be used with satisfactory results on iron pipe, will tear the threads on steel pipe, because of softness of the metal.—*Penberthy Engineer and Fireman*.

SET HIM TO WORK

The smart young man—his school honors thick upon him, and his intention to teach the world in general and his father in particular the manner in which up-to-date commerce should be conducted—stood earnestly holding forth in his father's office.

"You may rely upon me, sir," he was saying, with fervid emphasis. "I will devote my whole life to the interests of the business. It shall be my aim and ambition to keep the family name free from stain."

"Good!" said the old man gruffly. "That's the spirit. Tell the office boy to give you the whiting and ammonia; then go and polish up the brass name plate on the door."

—*London Mail*.



The above illustration shows the American Woolen Company's building during the course of erection. R. H. Robertson & Son were the architects; S. O. Miller, civil engineer; Hay Foundry & Iron Works, steel contractors. Dixon's Silica-Graphite Paint was used on the steel work of this building.

Dixon's Silica-Graphite Paint is a protective,
Made in one quality and very effective.
It does not blister, crack, or peel
Giving the best protection to iron and steel.

—R. J. C.



DIXON'S PAINT FOR CEMETERY FENCES

For the painting of cemetery fences, Dixon's Silica-Graphite Paint has been quite widely used because of its lasting qualities and dignified shades.

The above illustration shows a portion of the fence of the Forest Hill Cemetery, Scranton, Pa. Dixon's Silica-Graphite Paint was applied to this fence and gave a service of four years. Another coat was given the work last Fall, to be followed by a succeeding coat this Spring. Four years' service is regarded as very good in that section, since there is apt to be a great deal of ice accumulate on the work during the winter months, and the coal gases also have a destructive effect on most paints.

MASSACHUSETTS NORMAL ART SCHOOL

BOSTON, MASS., Feb. 28, 1910.

Joseph Dixon Crucible Company,
Jersey City, N. J.

DEAR SIRs:—The samples of pencils and crayons sent to me at the request of Mr. Van Dorn have been received. I thank you for them.

I consider the Dixon pencils excellent and shall be glad to recommend them heartily. The Dixon crayons are far superior to any I have seen.

Very truly yours,

Instructor.

ADVERTISING, ITS IMPRESSION ON THE MIND

A writer in *Collier's Magazine* says:

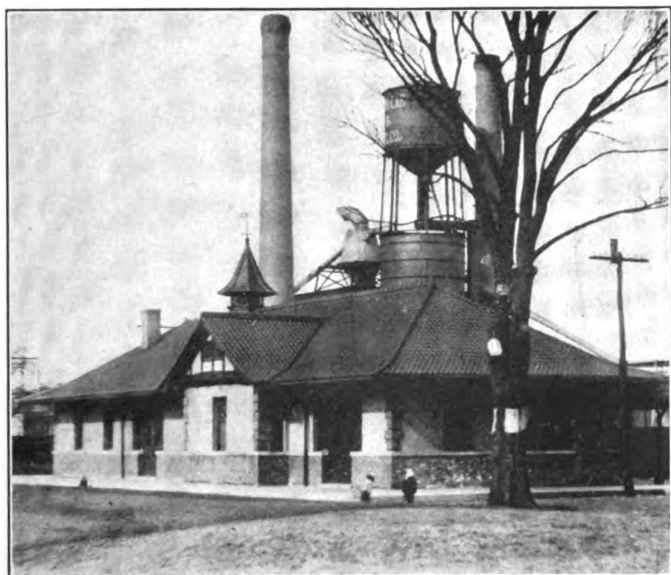
"Although I have never before analyzed it, I find that advertising has a strong influence in everything I buy.

"For example, I have been interested in vacuum cleaners and finally went to my dealer to get information about them. I had no definite idea of what cleaner I wanted, but before I realized it, I found myself asking the dealer whether he carried a certain well-known advertised brand. This advertiser had made his impression on my mind unconsciously."

NOT FAR FROM RIGHT

At Youngtown, Ohio, recently, a teacher in the city schools directed a boy who was sent to school for the first time, to buy certain materials and bring them to school the following day. The boy went to a drug and stationery store to purchase the supplies. He remembered the books he was to get, the pen, and the Dixon pencil; but there was one item he was not sure about. He said the teacher told him to get "some sort of a pill."

The druggist mentioned many varieties, ranging from the "little pink pill" to the massive blue ones of our early days, but the boy shook his head and said it was none of those named. The druggist scratched his head, gnawed his mustache and finally the light broke in on him and he gave the puzzled boy the wished for article—a pencil *tablet*.



**THE PLANT OF THE KEITH CAR AND
MANUFACTURING COMPANY**

The view shown on this page is reproduced from a photograph of a tower belonging to the plant of the Keith Car and Manufacturing Company, located at Sagamore, Mass. The water tower shown in this view is protected with Dixon's Silica-Graphite Paint, which is widely used on this class of work, as well as on exposed steel of almost every kind. The plant is located near salt water, which subjects the towers to severe conditions. Corrosion is noticed on all metal in this section that is not thoroughly protected, but the water towers to which Dixon's Paint was applied over a year ago are found to be in perfect condition, and in spite of the deteriorating atmospheric influences there is not a sign of rust or a breaking of the film anywhere.

Expensive structures should be protected with the very best paint. The Keith Company have found that it pays, along with other customers of the Dixon Company.

MOTOR BOAT AND CYCLE

Dixon's Motor Graphite may be introduced into the cylinders through the spark plug openings. The "bug gun," dry oil can, or quill and rubber tube may be used to apply the graphite.

The engines on launches, whether steam, gasoline or naphtha, offer opportunities for the use of Dixon's Graphite Lubricants. Dixon's Motor Graphite, being very finely ground, is used to advantage on cams and valves. Mixed with oil or grease it may be used in different parts where the construction of the mechanism does not interfere with its application and use.

Herbert L. Towle, writing in *Yachting*, says:

"It is an excellent idea to add to the oil a minute quantity, not more than a level teaspoonful to the half gallon of oil, of the finest flake graphite, ground especially for that purpose. A larger quantity is liable to settle and is also unnecessary, because a very little graphite lasts a long time in the bearings. The small amount used in this manner will not interfere with the ignition. It is also worth mentioning here that the addition of a very slight amount of graphite to the oil in the crankcase will help cylinder lubrication, if that depends

wholly or in part on the crankcase splash. It is, in fact, safest to feed pure oil from the mechanical lubricator, and put the graphite only in the crankcase. The result will be the same, and there will be no danger of clogged oil passages."

Another use of graphite in connection with the boat occurs in the form of Dixon's Yacht Plumbago or "Pot Lead," as it is frequently called. This product is applied to boat bottoms to reduce "skin friction."

An excellent method of applying the Yacht Plumbago consists in mixing it with thin shellac and brushing it evenly over the dried under-body. Or the dried powder may be dusted through a thin bag upon a still tacky coat of varnish; if this plan is followed only small areas should be treated at a time.

In either case the surface, after drying, should be polished with a soft rag or brush.

FROM OUR CHICAGO OFFICE

We have from time to time reproduced various eccentric addresses that come to this company. The last one is contributed by our Chicago office and is properly entitled to a place in the collection. It runs as follows:

Mr. JOS. DIXON,
SAUCIBLE CO.,
Chicago, Ill.



**JOHN HANCOCK BUILDING, HOME OF DIXON'S
BOSTON OFFICE**

The accompanying illustration shows the Boston Office of the Joseph Dixon Crucible Company, John Hancock Building, corner of Federal, Franklin and Devonshire Streets, Boston, Mass.

This attractive structure, one of the finest office buildings in the country, is equipped with all the modern conveniences and very centrally located. It is only a few minutes' walk from the South Terminal Station, and cars pass by direct to the North Terminal Station as well as affording quick connections with the Suburban Districts.

THE VAGARIES OF LIGHTNING

Lightning is one of the most picturesque of nature's demonstrations. But there is a certain awesomeness about it withal—it's quick, blinding flash followed by the tearing and rending of the thunder.

A very interesting article, entitled "Lightning and It's Whims" by Waldemar Kaempffert, which appeared in the *Saturday Evening Post*, gave some interesting observations in this connection. In speaking of lightning rods, the author stated that while approximately correct in theory, the ordinary lightning rod is not a thorough success. Reporting some experiments by Sir Oliver Lodge, the article states that the scientist proved that the lightning bolt will seek out a lightning rod only when the discharge occurs between a single cloud and the earth. Where one cloud is discharged into another, the result is an avalanche of lightning, so to speak, which ignores all set paths.

It is also stated that lightning oscillates with great rapidity and does not come to the earth, as one is apt to think, in a more or less straight line. Its action is likened to the movement of a pendulum. This is another reason why the straight conductor in the form of a lightning rod cannot well take care of the charge.

The best form of protection is recommended to be that built on the plan of a bird-cage. The modern steel building and the battleship are stated as being comparatively safe havens against lightning in that they are capable of dissipating and conducting away the bolt.

The freaks of lightning are many and inexplicable. In some of its effects it resembles the explosive gas that sometimes occurs in a battleship turret as a result of a flareback. Sometimes persons have been killed and their bodies charred while their clothes remained absolutely intact. On the other hand, the clothing may be burnt or torn from the body while practi-

cally no injury has been done to the individual. In many instances shoes have been torn from the feet and carried considerable distances.

Due to the difficulty in getting accurate statistics, the Weather Bureau does not keep records of lightning ravages now, though at one time it was attempted. The fatalities recorded were very small compared with our total population.

In 1900, for instance, there were 713 persons killed or injured fatally as a result of lightning. This is less than one thousandth of one per cent and means in other words, that there were less than ten people killed out of every million population. Of the number killed, the greater proportion in comparison with the population lived in the country. In the city, the article states, the rarity of death from lightning is due to the network of trolley and telephone wires, steel structures and metal roofs. This network provides the theoretical bird-cage.

As most everybody knows, trees are the very poorest of shelter. Sheds and barns are listed next. There seems to be a marked difference in the attractive powers of different kinds of trees, however, since some varieties are struck much more frequently than others. The article gives the figures in the following fashion: one for beeches, fifteen for pines, forty for other trees, and fifty-four for oaks. This means that oak trees are struck fifty-four times while other trees are being struck forty times, pines fifteen, and beeches once.

The saying that lightning never strikes twice in the same place is stated to be a fallacy. The particular instance reported is that of a house in Sedalia, Mo., which was hit twice in two minutes by two bolts.

Many will be surprised to learn that ice houses are exceedingly hazardous risks and are so indicated by fire insurance companies. An insurance man explains this on the theory that there is constantly arising from the ice house a watery vapor which affords a good conductor to the lightning bolt.

Pencil Quality

The pencil that sharpens easily, writes smoothly, and lasts well is the pencil of quality. We specialize on quality pencils—they're called Dixon

Joseph Dixon Crucible Co.,
Jersey City, N. J.

EVOLUTION OF THE GLORIOUS FOURTH

On each Fourth of July it has been our custom for years to make sacrifices to the Chinese God of fire-works (name unknown at this writing), these sacrifices being anything from a blown-off finger to a human life. Of course, there has been any multitude of "minor accidents" in the way of lost eyesight, disfiguring burns, etc.

We seem now, however, to be awakening to the insanity of our past forms of celebration. A number of communities have regulated or entirely prohibited the use of fire-works and explosives. New York City is planning this year to add its name to the cause of a safer and saner Fourth. The following is clipped from the *New York Times*:

Now is the time for the public-spirited members of this community to get together and plan a substitute for the noisy and dangerous celebration of Independence Day. Mayor Gaynor deserves praise for his approval of the order forbidding the sale of explosives in this city between June 10 and July 10. The dealers in fireworks were forewarned last Fall of the issuance of this order; this year the plea that they have laid in stocks of fulminating material and must dispose of them will hurt their cause, not help it. Meanwhile, what is Young America to do by way of a safe but exhilarating and inspiring celebration?

The way is open. Springfield, Mass., Detroit, Mich., and several other American cities have opened it. The city of Chicago plans this year a great parade, in which the National Guard will march in costumes of 1776, 1812, 1846, 1861, 1898 and 1910. Various nationalities will be represented by special floats. There will be parades of school children and of civic and patriotic organizations, accompanied by bands of music. At a general meeting distinguished orators and guests of the city will be heard, as well as a great chorus of 2,500 singers. Special contests of sports will be held. There will be individual decorations of the great buildings, of boats on the lake front, and a central decorative scheme will be carried out somewhat like that of the Hudson-Fulton Celebration in this city. An illumination at night, with well-ordered but gorgeous displays of fireworks, will fittingly close a day rich in its appeals to the imaginations of old and young.

Why not adapt Chicago's programme to the needs of this city? Of previous celebrations we have nothing to look back to but records of the killed and injured—they foot up to 1,339 for the last three celebrations in this city, more than the casualties in the Revolutionary battles of Lexington, Bunker Hill, Fort Moultrie, White Plains, Fort Washington, Monmouth and Cowpens combined. President Taft, the Governors of twenty-three states, the Mayors of forty-five cities, and scores of men of light and leading all over the Union are enthusiastically in favor of this reform. It is a well-started reform and is Nation wide.

AXLE GREASE SAVES MONEY

When you hear the wheels of a wagon or any kind of farm machinery squeaking, be sure the squeaks cost the owner money, because the axles are being cut to pieces.

There is a great difference in axle grease, and the only way

to know which has the best adhesive qualities is by actual test. Cheap grease is generally dear.

Axle grease that quickly wears off increases the friction; this pulls the flesh off the team and flesh costs money.

The wagon wheels of all vehicles and machinery should be carefully examined often. It will not do to be caught with dry wheels when away from home or in the midst of a busy day in the field.

The above is taken from *The Team Owners Review*. Every owner and user of horse-drawn vehicles should remember what *The Team Owners Review* states, for it is thoroughly true in every particular.

Dixon's Graphite Axle Grease will last from three to five times as long as ordinary grease, for the reason that Dixon's Flake Graphite is used as its base. Dixon's Graphite, as you probably know, is unaffected by the heat or cold, acids or alkalis. It stays with the surface to which it is applied until finally worn out. There is absolutely no waste to it, and it takes a long while to wear it off the surface to which it becomes attached.

It is to be remembered that Dixon's Flake Graphite cannot be duplicated in any other axle grease, and this is why Dixon's Graphite Axle Grease cannot be duplicated for satisfactory service.

THE SPEED OF A GREAT CITY

Statistics of the Great City of Chicago Show the Following
Startling Facts

Every forty seconds an immigrant arrives.
Every three minutes some one is arrested.
Every six minutes a child is born.
Every seven minutes there is a funeral.
Every thirteen minutes a couple is married.
Every forty-two minutes a new business firm starts up.
Every forty-eight minutes a ship leaves the harbor.
Every one and one-quarter hours some one is killed by accident.
Every seven hours some one fails in business.
Every eight hours an attempt to kill some one is made.
Every eight and one-half hours some couple is divorced.
Every ten hours some one commits suicide.
Every two days some one is murdered.

KEEP YOUR GRIT

By LOUIS E. THAYER

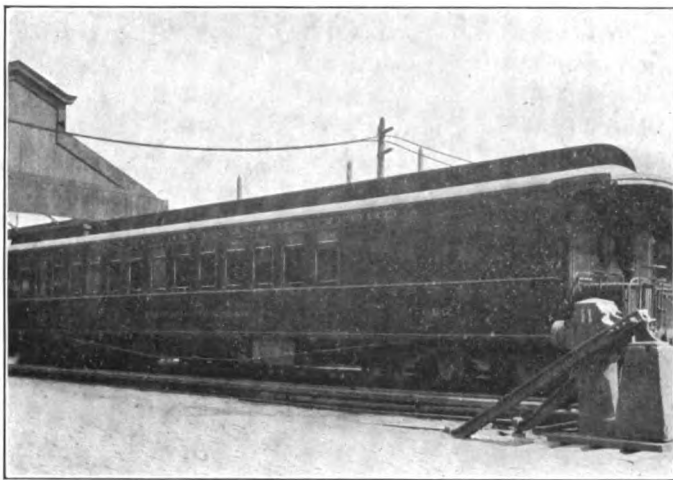
Hang on! Cling on! No matter what they say.
Push on! Sing on! Things will come your way.
Sitting down and whining never helps a bit;
Best way to get there is by keeping up your grit.
Don't give up hoping when the ship goes down;
Grab a spar or something—just refuse to drown.
Don't think you're dying just because you're hit.
Smile in face of danger and hang to your grit.

Folks die too easy—they sort of fade away;
Make a little error, and give up in dismay.
Kind of man that's needed is the man of ready wit,
To laugh at pain and trouble and keep his grit.

—*New York Times*.

DIXON'S GRAPHITE AIR BRAKE AND TRIPLE VALVE GREASE THE STANDARD

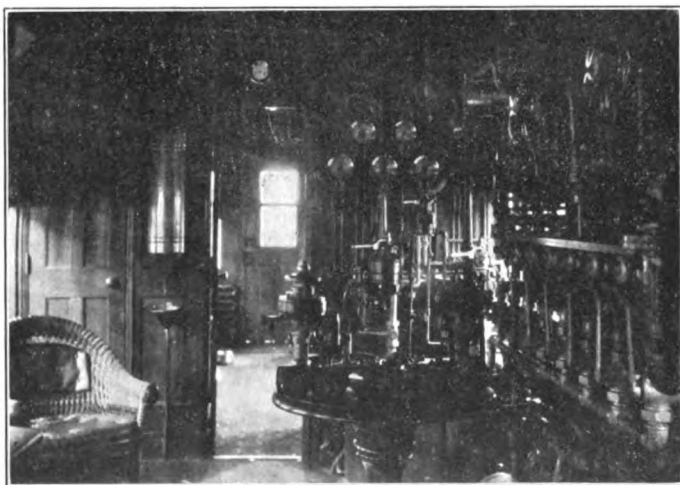
The accompanying illustrations show exterior and interior views of the Air Brake Car on the New York, New Haven & Hartford Railroad, in which 8,000 men of the New Haven System are receiving careful instructions.



The dimensions of this car are 68 ft. 4 in. over buffers, office in interior of car 15 ft. long, 8 ft. 4 in. wide, class room 30 ft. long, 8 ft. 4 in. wide, boiler room 15 ft. long, 8 ft. 4 in. wide.

This car is equipped with a boiler, Westinghouse 9½ inch air compressors, water tanks and coal bunker, as at about every point on the New Haven System they supply the air pressure direct from the car for use in demonstrating when instructing the men. In the classroom there is ample space to seat thirty-five men, although a class of fifteen is considered of sufficient size. In this classroom are an operative engine and tender brake, one passenger car brake and twenty freight brakes. There is also a rack of defective triple valves, as well as sectional views of all parts of air brake equipment such as is used at the present time. The gauges are so located on each operative brake that one can readily see what the brake is doing.

About 28 months are required to properly cover the entire New Haven System with this car. Much interest is manifested



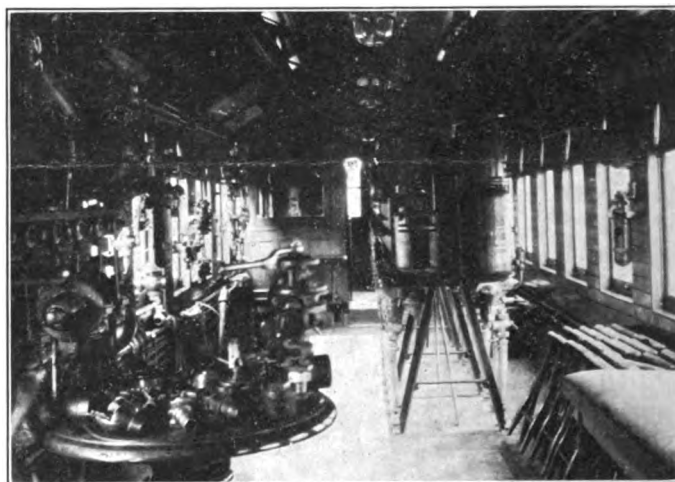
in this work, as the railroad men realize the importance of a good knowledge of the construction and operation of air brake

equipment. Arrangements are so made that classes can receive instruction day or evening, the car visiting every point where engine crews, train crews, car inspectors and air brake repair men are located. The system for conducting this intricate work is very complete, being efficiently handled through a well arranged card index, giving names of the men, occupation, subject and day of instruction. The importance of a competent system will be appreciated when it is realized that the New Haven Road has 37,828 cars and 1,226 locomotives.

Fully realizing the great importance of proper lubrication, the New Haven Railroad Officials, after some very exhaustive tests, adopted Dixon's Graphite Air Brake and Triple Valve Grease as the standard lubricant for all their air brake work.

An interesting article recently appeared in the *Railway Age Gazette*, describing the Mechanical Organization of the New Haven System. Under this organization, which is headed by Mr. G. W. Wildin, Mechanical Superintendent, Mr. C. U. Joy, General Air Brake Inspector, has been securing excellent results. For many years Mr. Joy, who is President of the Eastern Air Brake Club, has devoted his time to air brake work, taking a keen interest in perfecting this very important department in the New Haven System.

The New York, New Haven & Hartford Railroad is one of



the important roads on which Dixon's Graphite Air Brake and Triple Valve Grease is giving excellent results. Before its adoption as a lubricant for all air brake parts on locomotives, very careful tests covering many months were made. The close inspection which followed these tests showed that the results were highly satisfactory, not only from an operative standpoint but the economical advantages derived, thus reducing the cost of maintenance.

An interesting fact, which won much approbation, was that the air brake cylinder packing leathers were fully protected by the grease from freezing in extreme cold weather. This gratifying result was secured on account of Dixon's Graphite Air Brake and Triple Valve Grease not being affected by a low temperature.

To illustrate the great care used in following up this work, it is interesting to note that a special test of this equipment was made every other day. Twice during the year this equipment was taken down and thoroughly inspected and it was somewhat surprising to see the fine condition this equip-

ment was in. This almost perfect condition of the equipment was attributed to the fact that the grease remained at the point of application and was not moved from its place of service by the strong currents of air.

It is with interest that one notes the beneficial results obtained from the instructions as given at the car, in drilling the inspectors and air brake repair men in the proper performance of their duties, which include inspection, locating and repairing defects, cleaning, lubricating, stenciling and testing.

THE KING OF ENGLAND NEVER DIES

In the eyes of the English Constitution the King never dies. The death of one monarch is technically termed the demise of the Crown and is mechanically followed by the accession of his successor. Thus, when King Edward had drawn his last breath in the presence of his family, his oldest surviving son, the Prince of Wales, came at that moment into possession of the throne. No formal notification was necessary, but it may be assumed that the new monarch's subjects present at King Edward's death, paid homage to King George V.

Edward VII, King of Great Britain and Ireland and of the British Dominions beyond the Seas and Emperor of India, died at the age of sixty-eight years, five months and twenty-seven days; he had reigned nine years.

What will the reign of King George V bring forth?

SOMETHING ABOUT TIRES

Authorities advise the selection of large sized tires. These will give the best service. The tires should be kept well inflated and constantly watched so that any trouble may be attended to immediately. Be careful to avoid getting oil or gasoline on the tires. Light oils are especially injurious, as they are readily absorbed and cause the rubber to lose its strength.

Soapstone is very commonly used to lubricate the inner tube of a tire and to lessen friction between the tube and the shoe. Being very finely powdered, soapstone easily penetrates into the pores of the rubber, and where an excess is used, the results are often disastrous. Far better results are obtained by substituting flake graphite for soapstone.

Flake graphite, when used as a tire lubricant, makes a better and easier fit of the inner tube and materially reduces heating. To apply the flake graphite, rub it on the outside of the shoe, or sprinkle between the shoe and tire. It is not only more lasting than soapstone, but is less injurious to the rubber. In fact, it has no deleterious effect whatever, for graphite is inert. In the manufacture of rubber packing large quantities of Dixon's Flake Graphite are used to supply lubrication and to prevent wear.

In vulcanizing a tire shoe, by rubbing finely pulverized flake graphite upon the outside of the shoe, and sprinkling a little in the mold, such a good job is turned out that one would hardly know the tire had been repaired.

Rims should also be treated with flake graphite as a preventive of rust. The application of a thin coat of quick drying shellac varnish, to which flake graphite has been added until the consistency is about like that of thick cream, has given good results.

The matter that follows appeared in *The Logan Bulletin*. While written with special reference to commercial vehicles, it has a general value:

The greatest causes of excessive tire expense are overloading and overspeeding.

Start truck in a straight line before turning the steering wheel; because by turning the front wheels when the truck is standing still, a heavy and unnecessary strain is placed on the fastening device of motor tires of any make. Start gradually; avoid jerky motions under all circumstances.

Do not persist in running vehicles along street car rails, as this grinds down the edge of the tire.

SYRACUSE, N. Y., April 12, 1910.

Joseph Dixon Crucible Company,

Jersey City, N. J.

DEAR SIR:—A word about graphite. We have had no end of trouble with our cylinder head gaskets blowing and leaking. A new one for every month of hard work. I suggested polishing the gasket with Dixon's Flake Graphite (we have used Dixon's two years), and to the engineer's as well as my surprise, the gaskets never leaked a drop, this gasket working now three months.

Put it in paper GRAPHITE for others.

(Signed) J. H. JUST,

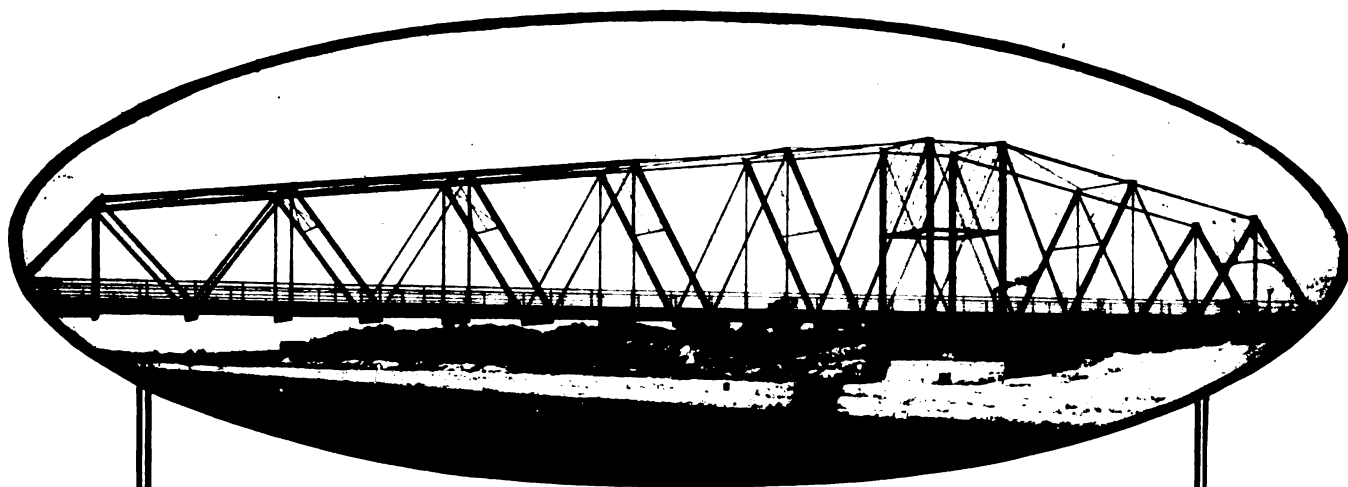
Syracuse, N. Y.

BROKERAGE AND GOING BROKE

Under the descriptive heading "Gambling," *Collier's* printed a little article concerning Wall Street. It presents some statements by brokers as a result of the investigation made by Governor Hughes' committee. The item accredits to a stock exchange member of forty years standing the statement that every one who enters Wall Street, except as a broker, loses. This man, to preclude the speculation of a junior partner, offered \$5,000 for the name and address of every winning customer of any Wall Street House, providing the customer has been an "active" one for a period of two years. Another member of a brokerage concern stated that in twelve years not a single customer ever took out \$1.00 of winnings. The article states that most brokers estimate that between ninety and ninety-eight per cent of the customers lose.

It is probably the hallucination of something for nothing or else the pure spirit of gaming uncertainty that prompts most bona fide speculators to enter the market. The satisfaction that comes to the real producer—"something accomplished, something done"—can never earn "a night's repose" for the speculator pure and simple.

There would seem to be another phase of the subject that should discourage the speculator and that is the mental and nervous strain. When the difference of a few points one way or the other means the making or breaking of a man, it is hardly possible for him to view the result dispassionately. This nervous strain is one of the most telling on the constitution. Ignoring the agony of suspense for the time being, it is impossible to ignore the indelible mark that is left on the impressionable nervous system. The law of compensation holds. In this case, it seems to hold at usurious rates of interest.



Selecting a Protective Paint

One of the first requisites of a good protective paint is an inert pigment. Another is a pure grade of linseed oil. Both of these requirements are met in

Dixon's Silica-Graphite Paint

and the result shows in practise. Dixon's Paint offers a long protective service because its ingredients are right in the first place. No destructive chemical action takes place between the pigment and vehicle in Dixon's Silica-Graphite Paint. All its protective energy is given undividedly to the structure painted. That's why it lasts so long.

Write our Paint Department.

Joseph Dixon Crucible Company,
Jersey City, N. J.



GRAPHITE

Vol. XII.

JULY, 1910.

No. 7.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

AUTO CYLINDER LUBRICATION

An authority on the subject has stated that a perfect lubricant for gas engine cylinders should either be consumed entirely or not at all. Dixon's Flake Graphite, being unaffected by any temperature encountered in the cylinder, meets this last requirement fully. It forms a smooth, protective coating on the cylinder walls and piston rings, lessening friction and increasing compression. Cutting, binding, or "seizing" is absolutely impossible in the presence of even a small quantity of flake graphite.

Dixon's Motor Graphite, made of the very finest grade of flake graphite procurable, is especially prepared for use about the motor. For cylinder lubrication it may be used in either of

two ways, by introducing it directly into the cylinder, or by mixing it with the oil in the crank case.

If the latter method is adopted, it should be used in the proportions of one teaspoonful of graphite to a quart of oil. This mixture may be introduced into the case by removing the side plate, or by pouring it down the vent pipe.

We do not recommend using graphite in force feed lubricators. The possible objection is that the graphite may settle in the leads, especially at bends or pockets, when the car is standing still.

Never use graphite in a gravity feed lubricator.

Dixon's Motor Graphite may be introduced direct to the cylinders through the spark plug hole or the opening in the make-and-break system. But little of the graphite should be used at a time. A very small quantity is sufficient to produce effective results, whereas any superfluous amount merely tends to accumulate on the plugs.

Do not pour the graphite into the cylinder, but *blow* it in so that it will settle on the cylinder walls instead of simply being deposited on the piston. For this purpose a "bug gun," dry oil can, or a quill with a rubber tube attached may be used. The quill may be filled by inserting it in the graphite, and then by blowing through the tube the graphite will be discharged into the cylinder.

Dixon's Motor Graphite may be introduced in steam cylinders by means of a small hand oil pump attached to the steam pipe, with a small globe valve between the pipe and the pump.

LUBRICATION OF SPRINGS

Comparatively few owners and even drivers seem to realize the necessity of oiling not only the spring shackles but the leaves themselves. There is more motion between the leaves of a spring than the average person imagines. It should be lubricated, if for no other reason than eliminating the annoying squeak that accompanies a dry spring. The best lubricant for this purpose is a mixture of ordinary oil and graphite or the regular graphite grease that is on the market. To facilitate the injection of the grease between the leaves, jack up the frame until the axle partially hangs by the springs. This will open the leaves, and with the aid of a thin stick the grease can be spread easily. A screwdriver or similar tool can be used without harm to further spread the leaves if necessary. It is best to be liberal in the application of this grease to insure its being squeezed over the whole surface when the frame is let down. The surplus can be wiped off, and with this treatment the leaves will not require attention for another season.—*Horseless Age*.

USELESS TESTS

A test which appears to prove something which every practical man knows is not so, is of no value beyond the weight of "salesman's talk." When a man tries to prove the value of his graphite as a lubricant by showing you how smoothly it will rub out on the palm of your hand, smile and let him talk, but don't believe it is any proof—the experience of forty years and more of expert engineers and others, has demonstrated the unequaled value of Dixon's Ticonderoga Flake Graphite as a lubricant. It may be mixed with oil or grease or used dry. Doses vary according to the needs. Our pamphlet explains fully.

WHY, MARY!

"Now remember, Mary," the teacher said just before the school exercises, "if you forget some of the words when you are singing your song, don't stop. Keep right on. Say tum-tum-tummy-tum or something like that, and the words will come back to you and nobody will know the difference. Now don't forget."

On exhibition day little Mary edified her audience with something like this:

" . . . and she wears a wreath of roses
Around her tummy-tum-tum."—*Everybody's*.

DIXON'S graphite publications sent free upon request.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

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BALTIMORE OFFICE, 1005 Union Trust Building.
BUFFALO OFFICE, 72 Erie County Savings Bank Building.
ATLANTA OFFICE, Fourth National Bank Building.

RANDSBURG, April 11, 1910.

Joseph Dixon Crucible Company,
Jersey City, N. J.

GENTLEMEN:—I write you in regard to some paint we had of your make. The barrel set in the yard for a long time and the name could not be made out, but I think it was Silica-Graphite Paint for smokestacks. However, I used it for that purpose and it was the best paint I ever used. It had graphite and boiled oil in it. I would like to know who are your agents on this coast that carry a stock of this paint.

Please send me a copy of your catalogue 94-H, also other literature pertaining to graphite.

Respectfully,

(Signed) W. D. PETER,
Randsburg, Kern Co.
Chief Engineer Y. A. M. & M. Co.

GRAND CENTRAL TERMINAL

The rebuilding of the Grand Central Terminal in New York City, including the complete rearrangement of the tracks and the erection of the new station is of direct interest to thousands, and the following statistics will give an idea of what these changes will accomplish:

Total of the area of the old terminal, 23 acres.

Total area of the new terminal, 75.8 acres.

The new terminal will provide forty-two tracks on the upper or express level, and twenty-five tracks on the lower or local level, assuring ample means for handling the increased traffic for many years to come.

The present station building, which was erected in 1871 and enlarged in 1898 and 1900, will be entirely removed, making way for a structure of very much larger dimensions.

The new station at the street level will be 600 feet long, 300 feet wide and 105 feet high. Below the street level it will be 745 feet long, 480 feet wide and 45 feet deep.

All trains using the Grand Central Terminal are operated by electricity, the use of steam locomotives having been entirely discontinued.

The new terminal will be the best in point of construction and in all the details of arrangement that money and engineering skill can provide.—*New York Central Weekly*.

"BUT OUR MACHINES ARE DIFFERENT"

"But our machines are different," some say, but as a matter of fact all machines are alike, only some are more so.

Dixon's Ticonderoga Flake Graphite is suitable in every way and is necessary to the free and easy running of every machine, only sometimes the Number 1 or coarser flake is required, and at other times the Number 2 flake, and again the finely pulverized flake graphite.

The better machined the journals and bearings the less graphite is required. The function of the graphite is to fill up the microscopical irregularities that always exist on the bearing surfaces, making a veneer-like coating of graphite that has wonderful smoothness and great endurance.

Get out of your mind the idea that your machine is different. It is like the fatal belief of the chronic invalid that he has a new disease that no doctor can cure.

If the bearings of your machine do not overheat, Dixon's Flake Graphite will make them run even cooler and much better and far more economically. If your machine develops hot bearings, you simply can't do without Dixon's Flake Graphite. If you are not familiar with it, let us send you samples and printed matter. The use of it spells economy with big letters.

WE HEAR much against the Pullman porter and possibly much may truthfully be said that is not in his favor, but his lot is not altogether a bed of roses. The following actual conversation was overheard by the writer:

Woman.—"Porter, I left a long yellow pin sticking in the back of my seat, have you seen it?"

Porter.—"No marm, I didn't see no long yaller pin but dere is a little pin I saw sticking in the seat, is dat it?"

Woman.—"Oh yes, that's it."

HOW WE KEPT THE DAY

As a matter of more or less timely interest, we reproduce here a poem by Will Carleton which, in a homely way, pleasantly satires the celebrating of our glorious independence. This poem is so old it may be new to most of our readers.

The great procession came up the street,
With clatter of hoofs and tramp of feet;
There was General Jones to guide the van,
And Corporal Jinks his right-hand man;
And each was riding his high horse,
And each had epaulettes, of course;
And each had a sash of the bloodiest red,
And each had a shako on his head;
And each had a sword by his left side,
And each had his mustache newly dyed;

And that was the way,

We kept the day;

The great, the grand, the glorious day,
That gave us—

Hurray! Hurray! Hurray!

(With a battle or two, the histories say,)
Our National Independence!

The great procession came up the street,
With loud *da capo*, and brazen repeat;
There was Hans, the leader, a Teuton born,
A sharp who worried the E flat horn;
And Baritone Jake, and Alto Mike,
Who never played anything twice alike;
And Tenor Tom, of conservative mind,
Who always came out a note behind;
And Dick, whose tuba was seldom dumb,
And Bob, who punished the big bass drum;
And when they stopped a minute to rest,
The martial band discoursed its best;
The ponderous drum and the pointed fife,
Proceeded to roll and shriek for life;
And "Bonaparte crossed the Rhine", anon,
And "The Girl I Left Behind Me" came on;

And that was the way

The bands did play

On the loud, high-toned, harmonious day,
That gave us—

Hurray! Hurray! Hurray!

(With some music of bullets, our sires would say,)
Our Glorious Independence!

The great procession came up the street,
With a wagon of virgins, sour and sweet;
Each bearing the bloom of recent date,
Each misrepresenting a single State;
There was California, pious and prim,
And Louisiana, humming a hymn;
The Texas lass was the smallest one—
Rhode Island weighed the tenth of a ton;
The Empire State was pure as a pearl,
And Massachusetts a modest girl;
Vermont was red as the blush of a rose—
And the goddess sported a turn-up nose;
And looked, free sylph, where she painfully sat,

The worlds she would give to be out of that—

And in this way

The maidens gay

Flashed up the street on the beautiful day,
That gave us—

Hurray! Hurray! Hurray!

(With some sacrifices, our mothers would say,)

Our Glorious Independence!

The people went home through the sultry night,
In a murky mood and a pitiful plight;
Not more had the rockets' sticks gone down,
Than the spirits of them who had "been to town;"
Not more did the fire-balloon collapse,
Than the pride of them who had known mishaps;
There were feathers ruffled, and tempers roiled,
And several brand-new dresses spoiled;
There were hearts that ached from envy's thorns,
And feet that twinged with trampled corns;
There were joys proved empty, through and through,
And several purses empty too;
And some reeled homeward, muddled and late,
Who hadn't taken their glory straight;
And some were fated to lodge, that night,
In the city lock-up, snug and tight;

And that was the way

The deuce was to pay,

As it always is, at the close of the day,
That gave us—

Hurray! Hurray! Hurray!

(With some restrictions, the fault-finders say,)

That which, please God, we will keep for aye—
Our National Independence!

CONCERNING SNAKE BITES

The *Scrap Book* in a recent issue had some information on the snake and its bite. There seems to be a tendency lately to regard the poison that the snakes secrete, as a very powerful agent for good as well as evil, provided we know how to employ it rightly. It was stated that considerable progress was made in the study of the venom in England until the passage of the British antivivisection act.

One of the most interesting pieces of information refers to the percentage of deaths as compared with the persons bitten. The article states that rattlesnake bites are fatal but one case in ten, copperhead bites in about one case in six. In view of these figures, it is easy to see how almost any remedy could receive a reputation as a cure. Alcohol has no real efficacy the article states; in fact it is apt to make matters worse except that it combats fear, and fear probably kills more victims than venom.

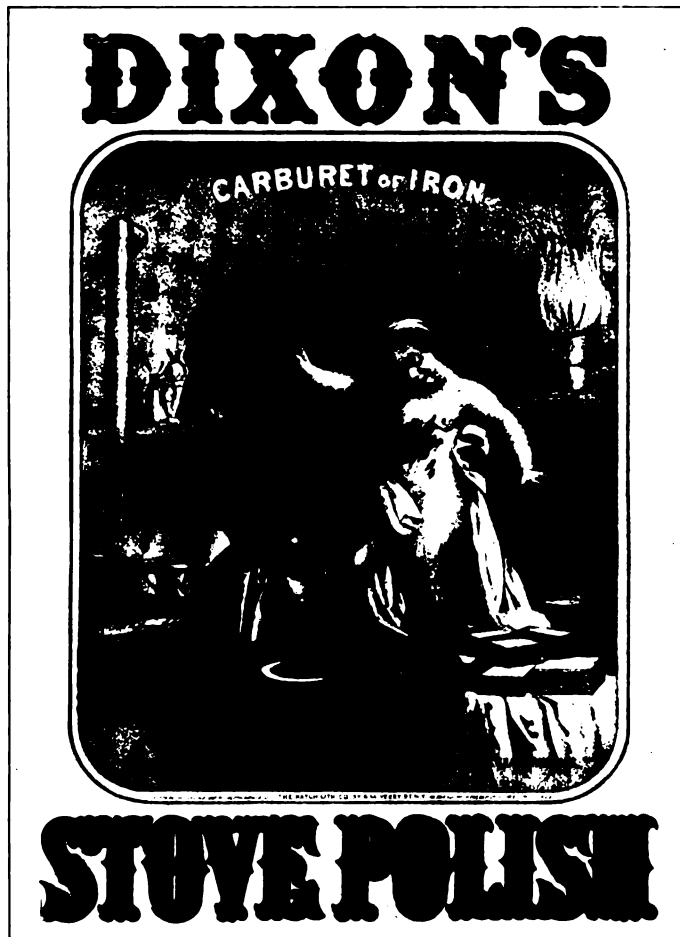
EXTRACT TAKEN FROM THE BRADY BRASS COMPANY'S LETTER

"We take this occasion to say that your pencils are the best advertising medium it has been our good fortune to take hold of, and the exceedingly live, enterprising spirit of your company in the matter of publicity and advertising is, we think, one of the secrets of your great success."

SOME PIONEER DIXON ADVERTISING

In the issue of February, 1896, *Art in Advertising*, published by the Art in Advertising Company of New York City, under the title of "Sixty Years in Advertising," an interview with the Dixon Crucible Company was published wherein was shown some interesting facts in regard to the advertising of the Joseph Dixon Crucible Company.

A cut was shown illustrating one of the oldest advertising lithographs, being a picture of a jolly good-natured negress applying Dixon's Carburet of Iron Stove Polish to a more than half willing and playful white child. It was a lithograph made for the Dixon Company by the old time firm



DIXON LITHOGRAPH POSTER, 1859.

Sarony, Major & Knapp of New York City in 1859. So far as the Dixon Company knows, that was the first lithograph advertisement ever used, and the Dixon Company was among the very first to make use of illustrated advertisements.

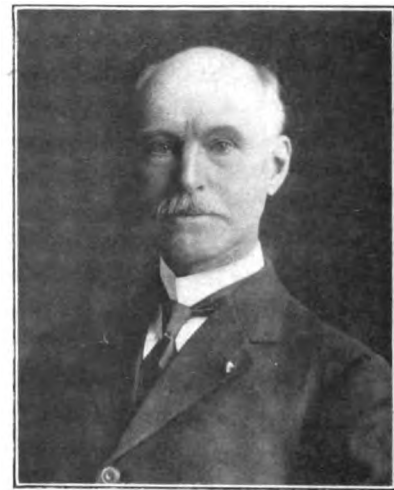
Mr. Richard Van Dien, who has been with the Company for over thirty years, is the originator of the "Brownies" or "Round-Heads," those comical children known all over the country as Dixon's Brownies.

The advent of these Brownies happened in a rather curious way. Mr. Chichester, the Advertising Manager of *Century*, used to send over return postal cards on which we were supposed to say that we would like to have our space increased or that we hoped soon to have an advertisement with him. One day, having nothing special to say, Mr. Van Dien very cleverly drew on a postal card a couple of Brownies holding

a huge lead pencil and sent it over to Mr. Chichester. Mr. Chichester at once returned it with the remark, "Why, this would be a great advertising idea," whereupon Mr. Van Dien fixed up copy for a quarter page wherein the Brownies formed a conspicuous part. That was the origin of the Dixon Brownies that have been copied so largely throughout the world by other advertisers.

It has amused us from time to time that we have been called to account by such advertisers and requested to drop our Brownies because we were imitators. On producing our evidence, however, we were permitted to go our way in peace and comfort.

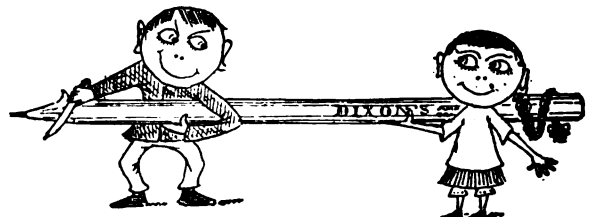
The Dixon Company has always been active in advertising and has originated many advertisements that have been considered specially effective. We have in our scrap-book some original advertisements of Dixon's Lead Pencils which were inserted in the Salem, Mass., Register in 1834. That was the first lead pencil made in the Western Hemisphere,



RICHARD VAN DIEN.

and as far as we can find out, the first advertising done by what is now the Joseph Dixon Crucible Company, was done by Joseph Dixon at that time.

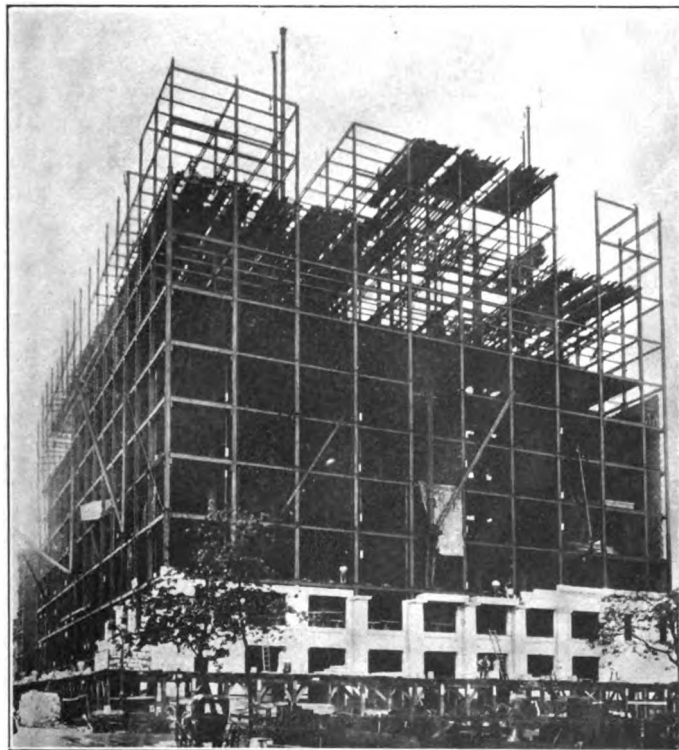
Joseph Dixon may also be credited with having been largely instrumental in introducing photography and lithography into this country. In 1854 the Dixon Company made use of a cut of its factory in advertising.



Probably one of the most pleasing advertisements that we ever put out was born thirty years ago of a rather original idea with the bringing of a schooner lot of oranges from Florida, where the Dixon Cedar Mills are. Each orange was wrapped in tissue paper on which was printed: "This orange was grown in Florida, where the cedar is cut for Dixon Graphite Pencils." They were large, fine oranges of the choicest kind. We packed a good many of them in baskets, holding half a

dozen each and sent a basket to the President of the United States and one to each of the cabinet members and generals of the army, big newspaper men and other great Americans. It proved an extremely good advertisement for the Dixon Company.

BORGFELDT BUILDING, NEW YORK CITY



The above photograph shows the Borgfeldt Building in course of construction, a handsome office building located at 16th Street and Irving Place, New York City, entirely occupied by Geo. Borgfeldt & Co., well-known commission merchants. We are glad to be able to say that the 2,300 tons of steelwork contained in this structure are protected with Dixon's Silica-Graphite Paint. The architect responsible for the Borgfeldt Building was James Riely Gordon; S. O. Miller was the engineer, and the Hay Foundry and Iron Works the steel contractors.

THE LEAD PENCIL AS A LUBRICANT

Printer's ink, considered as a lubricant for what Dr. Holmes has happily called "the racked axle of art's rattling car," is undoubtedly the one which has the least co-efficient of friction. It is the best of lubricants for the ways in which great undertakings are launched, and for the grooves along which profitable effort is exerted. What incalculable losses of power does it not avert, and who can estimate the friction which, without it, would wear out our lives in useless work! Civilization would be like Penelope's web, woven by day and raveled out by night, showing no gain; and the tedious years would come and go empty handed, leaving us still traversing with weary feet the pathways worn by preceding generations.

But it is not only as a lubricant that printer's ink merits the attention of the engineer. We must consider it as a source, as well as a conservative of power. It has been the pleasure of many writers to tell us how the hoarded sunshine

locked up in the growing plant uncounted centuries ago, is given forth again as light and heat when the carbon atoms in the coal we throw upon the fire rush to the embrace of the oxygen atoms they parted from when this old world was young. How startling this phenomenon in the case of printer's ink, when its black carbon atoms, warmed to ignition by the divine spark of human intelligence, are mingled with thought, and flash forth from the printed page to illuminate the world and drive the wheels of industry with constantly accelerating speed. There is something more in this than the releasing of the wound spring or the liberation of the suspended weight; something more than that which we note in the physical phenomenon of combustion—a return of the power in carbon into the forms in which, as light, heat and actinic force, it was absorbed and held by the vegetation of the early world. As letters on the printed page we see union of carbon with some part of that all-pervading creative intelligence which, as matter, it knew only as a law of nature, and by this union it becomes the true *elixir vitae* of the alchemist's dream. While we have it truth cannot die nor civilization retrace its steps.

—*Railway and Locomotive Engineering.*

WILKINSBURG, PA.

Joseph Dixon Crucible Company,

Jersey City, N. J.

GENTLEMEN:—I am still using your graphite with the lubricator on a pump and the boss don't know it, for he won't get me any. So I bought twenty-five cents worth and it surprises him how the water comes, for the discharge pipe shakes hard and they can hear it all over the yard. The little pump is two, three and four inch stroke and I think it is over 1,000 feet away from the tank, with an incline of 150 feet high. There is an eighty pound water pressure on the pump standing still and I don't know how much over 200 pounds when the pump is running, for I have burst the 200 pound gauge.

Yours truly,

UNSOLICITED BUT EXPRESSIVE

ALBANY, N. Y., May 12, 1910.

GENTLEMEN:—I am infatuated with your Dixon's Dainty 1160, No. 2. Where can I get them in this city?

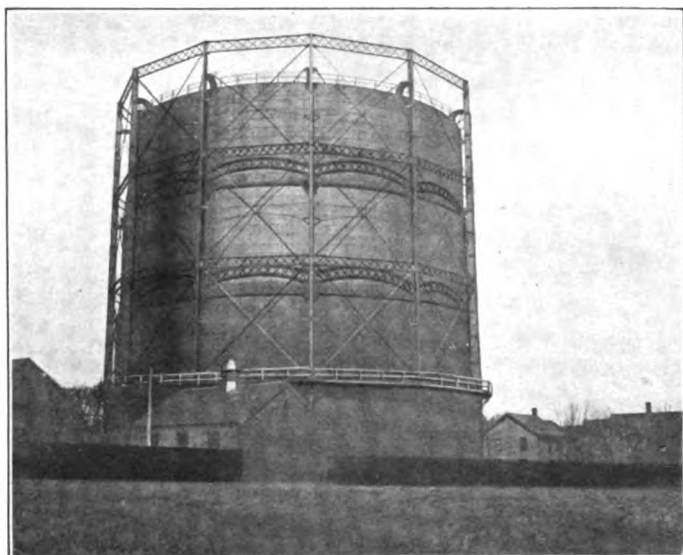
Get

Dixon's Flake Graphite and thus get away from friction damage to your machinery.

Write for free sample 190-C.

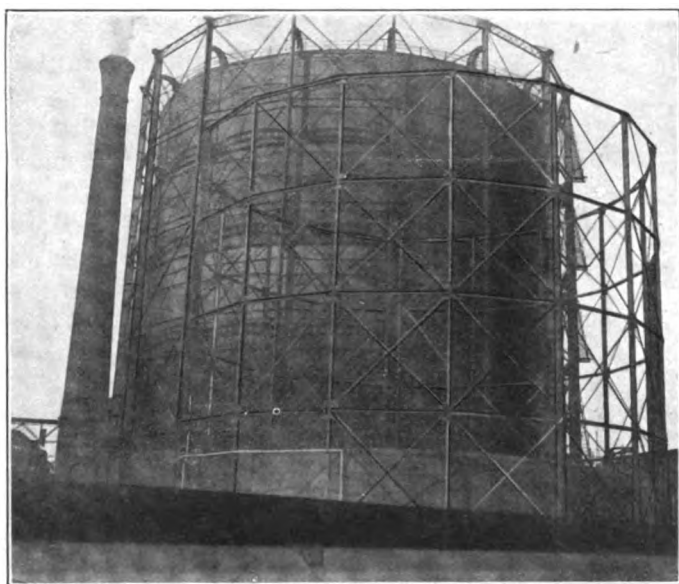
Joseph Dixon Crucible Co.,

Jersey City, N. J.



DIXON'S PAINT ON GAS HOLDERS

Another field in which Dixon's Silica-Graphite Paint is extensively used consists of gasometers (commonly known as gas holders). We reproduce in this connection two views showing gas tanks belonging to the Springfield Gas Company;



the smaller one of the two shown was painted eighteen months ago with Dixon's Silica-Graphite Paint, and the larger holder was painted two years ago with the same material. Both holders are reported by our Boston Office to be in excellent condition.

In taking the lower view here shown the camera was a little close and not perfectly level no doubt, therefore the Pisa Tower effect. Dixon's paint remains uninjured, however, even under this distortion.

AUTHORS' BLUNDERS

The good lady, who in a recently published novel has made her hero and heroine elope on a convenient locomotive a dozen years before there was a yard of railway in England, may plead that she has sinned in excellent company.

Shakespeare himself was sublime in his indifference to chronology, for did he not in "Julius Cæsar" set a clock striking three in ancient Rome long centuries before the first stroke of an actual clock was ever heard? And did he not set the printing press to work generations before Gutenberg was even cradled? He introduces a billiard table into Cleopatra's summer palace, and pictures King John and his rebellious barons fighting with cannon more than a hundred years before the first of them began to boom in England.

Schiller, in his "Piccolomini," introduces lightning-conductors a good century and a half before the pioneer conductor was erected; Ariosto, in his "Orlando Furioso," makes Charlemagne, King Edward of England and Henry, Duke of Clarence, contemporaries, in defiance of the accepted fact that they lived in very different epochs; and Chaucer actually makes Pandarus refer to Robin Hood.

Defoe made some amusing slips in his immortal "Robinson Crusoe." On one memorable occasion, it will be remembered, after making his hero strip in order to swim with greater comfort, he pictures him as providently filling his pockets with biscuits; and he represents the Spaniards giving a written agreement to Friday's father, sublimely regardless of the fact that both ink and paper were non-existent.

Trollope almost rivaled Defoe in picturing Andy Scot as coming "whistling up the street with a cigar in his mouth," a feat which the author himself, after many earnest attempts, had to give up in despair; and Ouida, in her novel, "Signa," equipped a violin with keys. "It was quite useless," she wrote. "The wooden shell he could piece together well enough, but the keys were smashed beyond all hope of restoration, and for the broken silvery strings there was no hope." And M. Zola, careful writer as he was, declares in "Lourdes" that "it was the deaf and dumb who gained their hearing and sight."—*The Typographical Journal*.

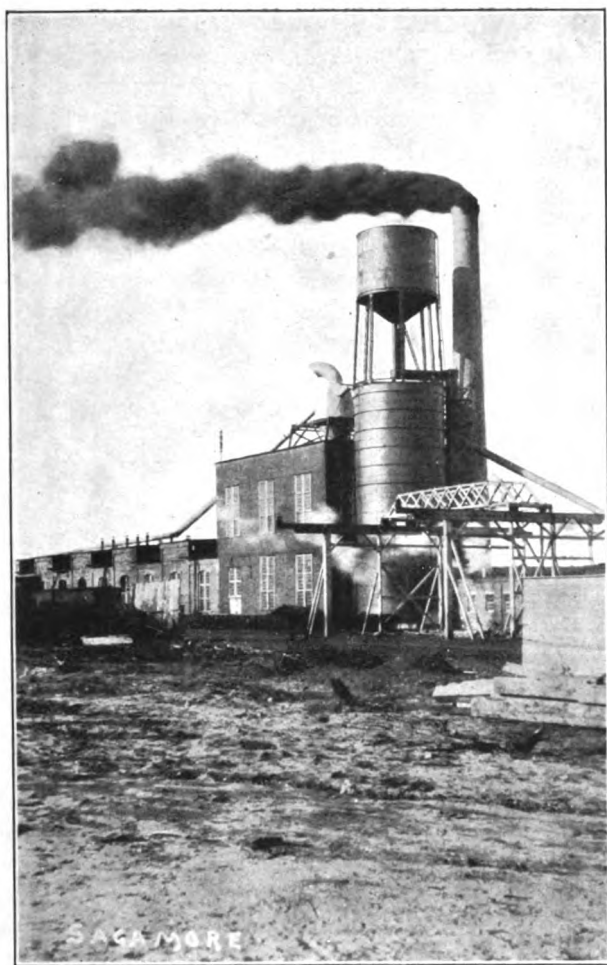
A BRIGHT writer in *The Rudder*, while busy upsetting some of the old-time ideas prevalent among sailors and navigators, says: "Some believe a thing because it seems to be based on good authority; others try it and give it up as a difficult job. Some have not patience to keep it up. When I am told a thing cannot be done, I always try it. When you read a sign, Look out, wet paint, you always put your finger in it to see if it is not dry. Generally it is not."

Test

Dixon's Flake Graphite on some bearing that has been giving you trouble.

We'll Send You Free Sample
190-C.

Joseph Dixon Crucible Co.,
Jersey City, N. J.



WATER TOWER OF KEITH COMPANY

Last month we showed a view of one of the water towers of the Keith Car & Manufacturing Company of Sagamore, Mass., that had been painted with Dixon's Silica-Graphite Paint and was perfectly protected against severe climatic conditions. We show here a view of another water tower belonging to the same company on which Dixon's Silica-Graphite Paint has given the same protective service.

AMERICAN FOUNDRYMEN'S CONVENTION

The following announcement of the Foundrymen's Convention and our representation at the same has been supplied us by our Chicago office. The convention is over with, but the announcement was written to precede it—therefore the difference in the tenses. The matter is good enough to be reproduced and we have not risked spoiling it by editing:

Detroit, as you may know, is one of the finest convention cities in the United States. For several years they have catered to this feature and everybody who goes there to a convention comes away loud in his praises of the place. The hotel accommodations are exceptional for a town of the size.

They have a beautiful river with boats plying back and forth to an island a few miles above Detroit and you can sit on the deck of one of these boats all day long and ride back and forth at a cost of ten cents, or you can get off at the island and spend as much time as you like and they take up your ticket when you return. This island is very large, with beautiful boulevards laid out through it, omnibuses and motor cars

carry passengers all around the island for a small fee, and its chief beauty lies in the fact that it is practically all in its virgin state. Very little has been done in an artificial way except to clean up the underbrush. Excursions can be made down the river to another island further away, also up the river to the St. Clair Flats, which are famous the world over.

Short trolley rides can be taken to places of interest like Mount Clemens, and the Canadian shore is very popular, where a fish dinner can be procured at the road houses with very little expense.

The convention will be held at the State Fair Grounds, about five miles from the City Hall, and practically outside of the city, but the trolley service is excellent and it is a beautiful ride. The weather in June in Detroit is usually ideal and the vegetation is at its best. Detroit is a city of trees, small parks and flowers and altogether very delightful.

As regards the Dixon exhibit, we shall attempt no special features this year but will have samples of crucibles, stoppers, nozzles, sleeves, muffles, skimmers, stirrers, retorts, graphite brick, special shaped crucibles for the patent furnaces and a few samples of motor brushes and foundry facings. We expect to have in attendance representatives from all of the principal offices of the Dixon Company, so that no matter from what part of the country a foundryman comes, he will meet somebody he knows at our booth. We shall have a very unique souvenir to distribute; a hearty laugh goes with each one of them.

FOLLOW-UP SYSTEMS

A follow-up system, when allowed to run without a proper check, is frequently apt to become troublesome to the one in the way and an unnecessary cost and foolishness to its owner.

We get a letter relative to a new plant we are about to erect. It is a good business letter and although we recognized it as a circular letter, we make prompt reply. Later we received another referring to the previous one and presuming that in the press of business we had overlooked it. Again we reply. Still later our attention is called to the first and second letters and we are asked if we won't do them the "business courtesy" of advising them if they "may" or may not "serve" us. We then fasten our patience down with a ten-penny spike and respectfully ask if they won't please call off that system bug. They may and they may not.

Know

Dixon's Flake Graphite from personal experience. It saves time, trouble—yes, and reputation.

Write for free sample 190-C.

Joseph Dixon Crucible Co.,
Jersey City, N. J.



MORE WATER TOWER RECORDS

The above view shows the water tower belonging to the Tumwater Power Development, Great Northern Railway Company, at Leavenworth, Wash. This, as will be seen from the photograph, is quite a good size structure, being 190 feet in height and having a capacity of 400,000 gallons. The contractors for this tower were the Minneapolis Steel and Machinery Company; J. T. Fanning of Minneapolis being the engineer.

The view also gives an idea of the severe climatic conditions in this territory to withstand which Dixon's Silica-Graphite Paint was chosen and applied to the power house, tank and tower.

PAINTING THE SMOKESTACK

The intelligent selection of paint demands two things: a knowledge of the paint's constituents (pigment and vehicle) and its record. When this knowledge is at hand it is usually easy to know whether a particular paint will meet the requirements of a specified service.

The service demanded from smokestack paint is in some respects very severe. The two most destructive elements usually encountered are the excessive heat and the sulphurous gases that escape from the stack. Dixon's Silica-Graphite Paint is capable of resisting both conditions.

Of all the paint vehicles, linseed oil is recognized as the best and most satisfactory. The vehicle for Dixon's Paint is the very highest grade of double-boiled linseed oil. We maintain a uniform standard and demand that the linseed oil we purchase constantly meet this standard.

Silica and graphite are the pigments in Dixon's Silica-

Graphite Paint. Both of these substances easily withstand the heat, sulphurous gases, and atmospheric conditions. They are inert and therefore do not combine chemically with the oil, like many metallic pigments. Chemical combination of pigment and vehicle results in a brittle coating—in Dixon's Paint the natural elasticity and "life" is not destroyed in this way.

Due to the lubricating qualities of the graphite in Dixon's Silica-Graphite Paint, it spreads easily and evenly while the silica supplies just enough "drag" to prevent too thin a coat.

The big item in any painting job is the labor, which costs about the same regardless of the quality of the paint and its protective efficiency. In the case of stack painting the cost is increased because of the hazard, since painters are in danger of serious burns or fatal falls.

The point to be remembered is that the lasting results secured with Dixon's Silica-Graphite Paint are due chiefly to the pigment, silica-graphite. This pigment comes in natural combination direct from the Dixon mines located at Ticonderoga, N. Y., and therefore is always under the control of this company. Neither graphite nor silica alone provide so good a pigment as do both combined—the silica supplies the same need in the pigment that an alloy does in gold.

The painter likes Dixon's Silica-Graphite Paint because it works easily under the brush and covers well. The owner likes it because it gives long protective service to his structures.

Incidentally, we mention that Dixon's Silica-Graphite Paint has been on the market for nearly half a century—it has stood and withstood the test of time.

For heated surfaces we recommend Dixon's Black, which is peculiarly adapted for such service. Purchase it in original cans, ready mixed for use.

Dixon's Silica-Graphite Paint is widely used not only on smokestacks and other heated surfaces, but on practically all exposed steel and wooden surfaces. Our paint department is in a position to advise you in reference to all classes of protective painting, and will gladly do so on request.

CHANGE IN SAN FRANCISCO OFFICE

Mr. A. C. Bowles of the Dixon Company has been made Manager of the San Francisco Office succeeding Mr. James G. Allen.

We shall have fuller notice of the matter in our August issue.

Apply

Dixon's Flake Graphite to all bearings that squeal or run hot. They'll cool quickly.

Sample 190-C free to you.

Joseph Dixon Crucible Co.,
Jersey City, N. J.



EIGHT YEARS ON BUFFALO RIVER BRIDGE

The photograph reproduced above shows the Michigan Street Bridge, which crosses the Buffalo River, Buffalo, New York. Mr. George H. Norton, Deputy Engineer Commissioner, Department of Public Works, Buffalo, notified us that Dixon's Silica-Graphite Paint was applied to this bridge in 1902 and that, judging from its present condition, the paint is good for another like period of service. This is merely another instance of the service protection that Dixon's Silica-Graphite Paint provides.

NINETEEN YEARS AFTER

A member of the firm of Lyon & Healy, the big Chicago music house, during an interview with an advertising reporter told of some of the first advertisements they placed two or three decades back, whereupon the reporter asked: "Did this advertising pay?" The reply was: "I cannot say, the returns are not yet all in."

We are reminded of this instance by receipt the other day of a postal card requesting information about our paint. This card is dated June 1st, 1910, but refers to an advertisement we ran in the *Youth's Companion* Premium Issue 1891, nineteen years ago.

We have had a number of durability records made by Dixon's Silica-Graphite Paint. This, as far as we know, is our best record for the endurance of our paint advertising.

A NEW DIXON PENCIL

There is always room for a new good pencil, and that is what we have provided in the form of "Dixon's Manual Training." This is an attractive pencil, hexagon shape, with a rich bronze green finish. It is not alone on the outward appearance, however, that this new Dixon pencil bases its popularity, but on the fine grading of its leads which are found to compare favorably with the most expensive imported pencils, while costing considerably less. "Dixon's Manual Training" is supplied in nine grades, running from a very soft pencil to a very hard one, meeting the purposes of the architect and artist as well as the ordinary user who wants a good pencil.

THE WHEELING TERMINAL RAILWAY COMPANY
OFFICE OF THE SUPERINTENDENT

WHEELING, W. VA.

PENINSULA, May 26, 1910.

Joseph Dixon Crucible Company

DEAR SIR:—See your letter of May 24, 1910.

Pleased to advise that your sample of front end finish was applied and we like it so well that we have ordered 100 pounds of it through our purchasing agent.

Yours very truly,

(Signed) D. S. MENDENHALL,

Gen. Foreman



LINCOLN IRON WORKS

The cut appearing above is reproduced from a photograph showing one of the cranes of the Lincoln Iron Works at Rutland, Vt. This crane was painted over two years ago with Dixon's Silica-Graphite Paint, Natural Color, and when recently examined by our representative, was found to be in a perfect state of preservation. In addition, of course, to constant exposure to atmospheric conditions, the crane is exposed in a way to abrasive action in fulfilling its "knock-about" duties.

Dixon's Silica-Graphite Paint specializes on one thing and does that thing well—it protects.

TROUBLES OF THE PRINTER

An operator in Michigan writes: "(1) We have experienced considerable trouble with the plunger sticking in the top of the well. I clean the plunger every night before quitting time, as I was taught to do under your instruction. The foreman tends to the melting of the metal, and mixes with it a considerable amount of rosin and sal ammoniac. I had wondered if perhaps putting too much of this mixture with the metal had something to do with the plunger sticking. The plunger, instead of going down easy as it should, goes down with a jerk, and occasionally does this before the proper time, which naturally causes a bad squirt."

Answer.—(1) To remedy the trouble caused by the plunger sticking, the use of rosin and sal ammoniac should be discontinued, and instead use mutton tallow. Put a small piece in your well under the plunger and about a half teaspoonful of graphite. This will tend to prevent the sticking. You should not use rosin at all; the tallow is much to be preferred.

—*Inland Printer.*

PENCIL SUGGESTIONS

By EDMOND ST. JOHN

People of yesterday looked for handsome finish on the pencil, people of today look for handsome quality in the pencil; more people will to-morrow.

Buy your pencil for its effectiveness, not for its affectiveness.

A good point makes for poignant results.

Ten poor pencils for ten cents, are not as cheap as one good pencil for ten cents; besides breaking the points you may break your temper.

Pencils have no lead in them, but they lead in the world's utility.

If you are tenacious you will buy a tenacious pencil.

If you are responsive you will buy a pencil that will execute responsively, a flexible pencil for a flexible user.

Don't forget, the wise read you by you pencil point.

Some people copy well, some pencils can make good copy, some can't. Good copy is first in the person, as the word Eterno is in the first person speaking.

Use your pencil to find the true Eldorado in your life.

All Anglo-Saxons seek an Eldorado.

DIXON'S GRAPHITE LOCOMOTIVE FRONT END FINISH FINDS NEW FRIENDS

The following communication from the General Superintendent of the Virginia-Carolina Railway Company was sent to our Philadelphia office, and we have much pleasure in reproducing the same.

VIRGINIA-CAROLINA RAILWAY Co.

ABINGDON, VA., May 18, 1910.

Joseph Dixon Crucible Company,

Philadelphia, Pa.

GENTLEMEN:—Yours April 21st. Beg to advise we tested the sample of Dixon's Graphite Engine Front Finish and found it highly satisfactory. Until we use an overstock of other front finish which we had on hand, we cannot give you an order. However, as stated above, it is certainly fine front end finish.

Yours truly,

(Signed) E. P. KINSIE,

Genl. Supt.

Today

Dixon's Flake Graphite will save you money lost because you didn't use it yesterday.

Write for free sample 190-C.

Joseph Dixon Crucible Co.,
Jersey City, N. J.

ECHOES FROM A PAINT TEST

By R. J. C. Cullen

Some so-called experts tried to find
 An inhibitive pigment, with oil combined,
 To protect a material from the weather unkind.
 They thought the pigments, when the oil had gone,
 Would leave the steel in perfect form
 Such "inhibitive pigments" and oil were applied;
 The oil, ere long, had saponified.
 The pigment and oil would not agree
 There being too great affinity.
 How to down any pigment that's quite inert,
 This band was chosen, each one an "expert."
 Yet graphite and carbon can over them lord
 As many "inhibitives" have gone by the board.
 Just such a method as this, they say,
 Will test the film in every way:—
 To cut the paint, and lay it bare
 To see if the rust has gathered there.
 A learned one of these learned few
 Said, "The tests we have made will never do;
 Our torch of learning has as dim a glow
 As when we started years ago."
 So testing materials must be tried again,
 But not with the same pigments, nor by the same men.
 "Dixon's Silica-Graphite Paint" is nature's own,
 Upon this foundation Dixon's has grown.
 Graphite is a pigment inert in every way
 Some call it "stimulator" (gives life, we say);
 As we make it, Silica, Graphite and Oil ground together
 Withstand the test of time and stress of weather.

MAGAZINE ADVERTISING AND THE WONDERFUL THINGS IT TELLS US OF

What a wonderful thing the modern magazine is. Through it one can bring to his home and to himself almost anything that man wants here below.

An advertisement will tell him that although the opera season has closed for him, it may continue on through the year, day and night if you like to have it so. Possibly by a contrivance he can set the machine going at the time he desires to wake and, like Andrew Carnegie, can come from Dreamland as the music swells through the room.

There are books advertised that will teach how to manage great corporations; how to be able to do all of the necessary auditing, and books which tell him how to secure capital and to successfully promote a business enterprise of any kind.

He is also directed where he can learn how to collect his old accounts, but still retain the friendship of the people who have owed him for so many years. He is taught how to get them to pay up and to make them keep on giving him business.

If he desires, as he probably will after becoming so successful, to lengthen his life, he is taught how to enjoy life in full through exercise, how to get a degree of fundamental, physical strength that will make his life and work a pleasure, how to clear his brain, have a powerful heart, massive chest, strong lungs and fine back, broad, powerful shoulders, with a wrist

and arm of steel, as we used to read of in our old time dime novels.

He is further told how to write a letter that does just what another man must make a personal call to do, how to thereby acquire the most independent power in the modern business world.

If, after learning how to make lightning calculations, he does not care to bother himself with doing so, he is directed where he can find a mechanical accountant which adds, multiplies, subtracts, divides, etc. He has his choice between that and a machine that sees and remembers every sale or receipt and tells you what it saw.

If he desires to have the law on his side and does not want to be bothered with a lawyer, he simply buys a book and becomes his own lawyer. It may be that he will have a fool for a client, but he has the consolation of knowing that he has a book which any minute of the day will give him the best legal advice on every conceivable point, that it will save attorney's fees, delays in getting information he wants and that will make it easy for him to keep clear of legal entanglements.

If he happens to be a man on salary, he is told how to double his salary just as easy as rolling off a log.

If he should desire to go into the real estate business and make a fortune, a perfected and thoroughly practical scientific method of doing so will be laid before him at his request. The information will be an inspiration to the indifferent, a spur to the laggard, and a stimulus to the ambitious, although it may be that the man who furnishes such information will be glad to have a salary of a thousand dollars a year—but the system is all right without doubt.

"If you want to learn how to write well without pen and ink, send a two cent stamp"—and you will receive the information that you should try a Dixon Pencil.

In fact, there is nothing that he need to be deficient in if he will only answer the advertisements, whether it is running a great corporation or a one cylinder automobile.

If people would only learn to read advertisements they would find it much better than the ordinary circus. You will be told how to eat, how to sleep, how to exercise, how to make money, how to keep well, and even how to smoke better cigars without increasing your present expense one penny.

There is no end of fun in the advertisements of modern magazines.

Use

Dixon's Flake Graphite and see how friction troubles leave you for the other fellow. *Write for free sample 190-C.*

Joseph Dixon Crucible Co.,
 Jersey City, N. J.

Dixon's Flake Graphite

The one brand that has proved its lubricating qualities, the one brand that you can feel there is no experiment in—the brand that has made good.

Dixon's Flake Graphite offers a lubricating service that can be secured in no other way. Dixon's Flake Graphite goes direct to the source of friction, microscopic roughness, and reduces this roughness by filling in the depressions, becoming pinned upon the elevations, and forming a smooth, tough, durable coating.

This graphitic coating not only reduces friction, but protects the friction surfaces from cutting and seizing.

Dixon's Flake Graphite is widely and wisely used in railroad work—write for particular information about your own lubricating problem.

Dixon's Graphite Air Brake and Triple Valve Grease

For the lubrication of the delicate mechanism throughout the air brake system: engineer's brake valve, distributing valve, triple valves, angle cocks, brake cylinders and pistons.

The consistency of Dixon's Air Brake Grease varies but slightly under wide temperature variations. Thus by maintaining a "constant of correct lubrication" the tendency to sudden action of the triples is minimized.

If you've had any trouble with your air brake system, we'll be glad to send you test samples.

Joseph Dixon Crucible Company
Jersey City, N. J., U. S. A.

GRAPHITE

VOL. XII.

AUGUST, 1910.

No. 8.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

COOL HEADS NEEDED

When the railroads decided to increase wages to the amount of about \$200,000,000 annually; no one objected.

The railroads were forced to do this by the pressure of the higher cost of living, and the railroads frankly said that if they did so they would be obliged to slightly increase the cost of transportation—it amounted to only three-quarters of a cent on a pair of shoes. When this advance in freight rates was made—justified by the increase of wages, and for necessary improvements—the heavy hand of Uncle Sam was laid upon them and they were charged with violating the law—the Sherman Act.

Under such a condition what will be the result? Every industry in the land will feel the effect. All improve-

ments planned will come to a halt. Orders ready to be placed for steel, lumber, brass, electrical supplies, such as copper wires, motors, generators, etc., paints, varnishes, and all the hundreds of kinds of supplies daily used by railroads will be canceled or held up. Every manufacturer and every employee of that manufacturer will suffer; where will it all end?

In thinking of railroads, legislators seem to forget that 60,000 stockholders own the Pennsylvania, 20,000 the New York Central, 20,000 the Union Pacific and 11,000 the Southern Pacific, and that millions of people depend upon the railroads for their food and clothing and for their happiness and comfort.

If the Government of the United States can do this to the railroads, it can do the same to all organized industry and if all organized industry is at the mercy of the politician, then the ghost of another period of business depression and panic may be discerned by all—a period that will not soon be forgotten.

Now is the time and need of cool heads and an education of our Congressmen and Senators as to what constitutes good business rather than "good politics." Put good statesmen on the platform and let the demagogues and muck-rakers go way back and sit down and keep quiet.

Distress not with thy troubles other souls,
Since life hath thorns enough for all;
With kind and tender heart and helpful hand,
Gain strength by lifting those who fall.—SAADI.

WILL ACCEPT NO PRINTED LETTERS

There is humor in business as well as on the stage. According to the American Pressman, a Cincinnati commission house had sold a bill of goods to a new customer in the interior of Kentucky, who was not rated in the commercial reports. The goods went C. O. D. and a typewritten letter advising the country merchant that the goods had been sent was mailed to him. This merchant acknowledged the receipt of the letter and raised some highly original objections to the business methods of the commission house. He wrote as follows:

"Jentlemen—I want you to understand sur that I aim't no dam fool when I bort that Bill from that read Headed Agent of yores he tole me that you sent him all the way from cyncynita to git that order. I thot he was lying and i bort all my goods from the jersey and he told me he sole the jersey. now you writes me a printed letter and sez if i send you the munney you will send me the goods. i recon you will most enny durn fool ud do that. i would not mind a Bit sending in the munney and risk gittin the goods but when i recollect how you and yor eagent done me i refuse to do it if you would of treted me right and rit me letters in ritin and not of sent me that newspaper printed letter like I wus a dam fool and could not read ritin i would a tuck the goods and pade the munny. now i dont wont no more of yore printed letters i wont stan sich from no house i am fifty six year ole the last of next comin jinuuary and the fust man has got to put my back on the ground yit. i may not have as much larnin in gramma as you got but i can whup you or enny uthr dam yanky that wants to try riting me a printed letter."

—The Bookkeeper.

CLEANING OF THE INSIDE OF TIRE COVERS

EDITOR *Horseless Age*:—

I notice J. R. Wilkinson's inquiry in your issue of January 26, relative to the method employed in cleaning the inside of the case of a pneumatic tire preparatory to the use of graphite.

My method has been to use a cloth dampened with gasoline, just enough gasoline to drip when the cloth is wrung out. In some instances the case will be found very liberally coated with the talc preparation, in which case a good, stiff bristled brush may be advantageously used to get off the worst part of it. Before applying the graphite be sure and see that all the gasoline has been evaporated to avoid getting the graphite lumpy. A coating of graphite on the walls is all that is necessary, and if well applied in the first place the inner tube can be taken out and put back almost indefinitely without the need of any further application.—H. H. WESENER.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

OFFICERS:

President—GEORGE T. SMITH
Vice. Pres & Counsel—WILLIAM H. CORBIN
Treasurer—GEORGE E. LONG
Secretary—HARRY DAILEY
Ass't Treas. & Ass't Sec'y—J. H. SCHERMERHORN

DIRECTORS:

GEORGE T. SMITH	WILLIAM H. CORBIN
GEORGE E. LONG	EDWARD L. YOUNG
WILLIAM MURRAY	HARRY DAILEY
WILLIAM G. BUMSTED	

OFFICES AND SALESROOMS:

NEW YORK SALESROOM, 68 Reade Street.
PHILADELPHIA SALESROOM, 1020 Arch Street.
SAN FRANCISCO SALESROOM, 145 Second Street.
CHICAGO OFFICE, 1324 Monadnock Block.
BOSTON OFFICE, 648 John Hancock Building.
PITTSBURGH OFFICE, Wabash Terminal Building.
ST. LOUIS OFFICE, 501 Victoria Building.
WASHINGTON, D. C., OFFICE, 1410 H Street, N. W.
BALTIMORE OFFICE, 1005 Union Trust Building.
BUFFALO OFFICE, 72 Erie County Savings Bank Building.
ATLANTA OFFICE, Fourth National Bank Building.

SOME GRAPHITE STATISTICS

Graphite is used for the manufacture of crucibles, as a lubricant, in the manufacture of pencils, as a pigment, for coating foundry castings, in the manufacture of electrodes, and for numerous minor purposes. The grades are: amorphous, crystalline, and artificial. In 1908, 11,456 tons, valued at \$762,367, were imported; 1443 tons of amorphous, valued at \$75,250, and 1144 tons of crystalline, valued at \$132,840, were produced in the United States. It is now quoted in New York at five to ten cents per pound, depending on purity, size, and character of crystallization. Graphite occurs usually irregularly disseminated through schists, and the process of treatment is one of crushing, sizing, and close concentration. A market should be sought according to the purity and particular adaptability of the grade found.—*Mining and Scientific Press.*

AVIATION DAY AND DIXON'S AEROPLANE ASSORTMENT

The following clever piece of matter was sent out by Mr. G. A. Cadwell, a prominent New England dealer and a good friend of the Dixon Company. This item speaks for itself.

JULY SECOND WILL BE

HAMILTON AVIATION DAY

IN

NEW BRITAIN, CONN.

YOU ARE CORDIALLY INVITED TO MAKE MY
HOUSE AND GROUNDS YOUR HEADQUARTERS FOR
THE ENTIRE DAY; ONLY THREE MINUTES WALK
FROM THE PARK—PLENTY OF ROOM

BE SURE TO COME, NOT TO BUY

DIXON'S AMERICAN
GRAPHITE PENCILS

BUT TO WITNESS THE FIRST AEROPLANE
ASCENSION MADE IN NEW ENGLAND

VERY RESPECTFULLY

G. A. CADWELL

45 HAWKINS STREET

H. E. WESTERVELT BACK IN THE FOLD.

We are glad to be able to announce that H. E. Westervelt again carries the Dixon banner, and is blazing a trail in Canada from Port Arthur to the Pacific coast.

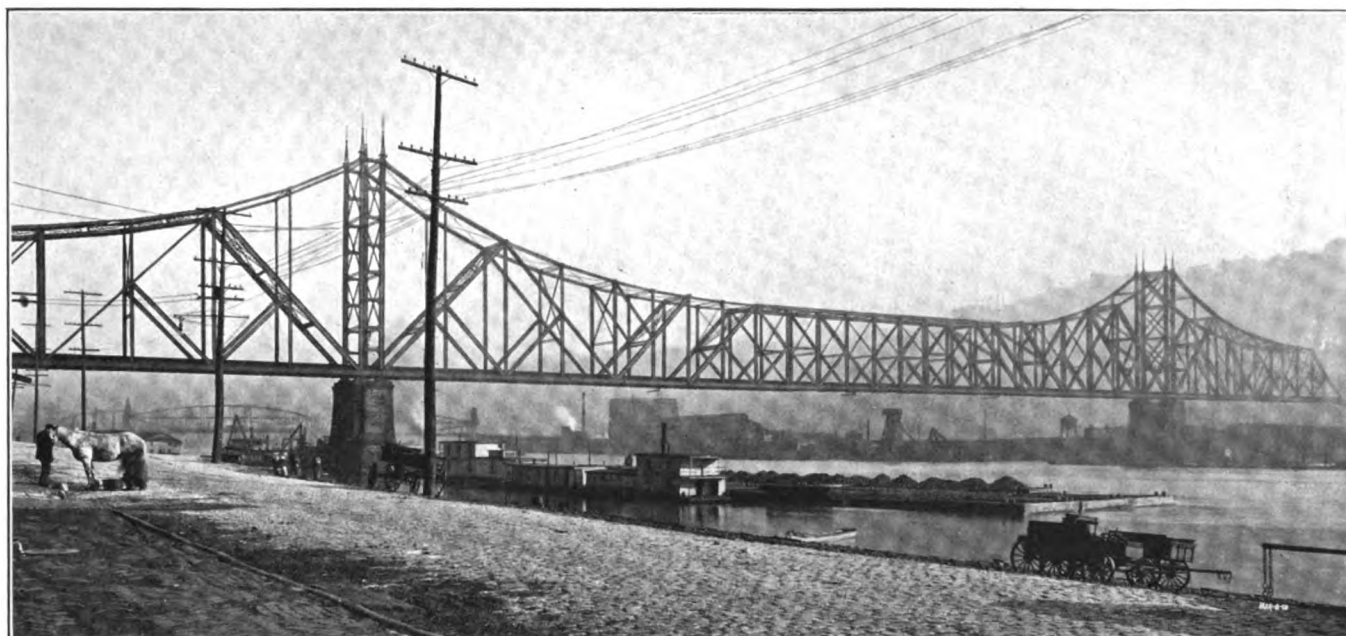
Mr. Westervelt came with the Dixon Company October 15, 1885. After an unbroken service of nearly twenty-two years, he left to try his fortune with other American emigrants who have crossed the Canadian border. Naturally his long connection with this company made him familiar with the Dixon line, and his three year's experience in Canada has put him in touch with the Canadian situation. This combined knowledge will, we believe, lead to advantages in which Mr. Westervelt, customers and the Dixon Company will all share. Mr. Westervelt will have an office in Winnipeg and will be the Dixon representative there and for the territory mentioned above.

LUBRICATING A DOOR LOCK

A door lock may be lubricated by using some lead scraped from the lead in a pencil and put in the lock. This may be done by putting the scrapings on a piece of paper and blowing them into the lock through keyhole.

—*Penberthy Engineer and Fireman.*

THE New York Association for the blind has a workshop at 118 East 59th Street, New York City, where brooms are manufactured and chairs are caned. How fortunate it is for the blind that they are able to forget to some extent in useful work that most terrible affliction, the loss of sight.



MONONGAHELA RIVER BRIDGE, PITTSBURG

The above picture shows the bridge crossing the Monongahela River, belonging to the Wabash-Pittsburg Terminal Railroad. This is a double tracked railroad bridge and one of the largest cantilever bridges in the country; the main span over the river being 815 feet. The total weight of the bridge is 8,000 tons, and the towers, which will be noticed at either end of the structure, are about 100 feet above the bridge proper. The matter of repainting this structure came up recently and two coats of Dixon's Silica-Graphite Paint were applied for the purpose, since its general reputation in railroad work is so well and favorably known.

W. F. Purdy, chief engineer, and H. W. McMaster, general manager of the Wabash-Pittsburg Terminal Railroad Company who have charge of maintenance work, should be mentioned in this connection.

PRAYER OF THE HORSE

Translated from the Swedish

"To thee, my master, I offer my prayer: Feed me and take care of me. Be kind to me. Do not jerk the reins; do not whip me when going up hill.

"Never strike, beat, or kick me when I fail to understand what you want of me, but give me a chance to understand you. Watch me, and if I refuse to do your bidding see if there is not something wrong with my harness.

"Do not give me too heavy loads; never hitch me where water will drip on me. Keep me well shod and examine my teeth when I fail to eat. I may have an ulcerated tooth. That, you know, is very painful. I am unable to tell you in words when I am sick; so watch me, and I will try to tell you by signs.

"Pet me sometimes; I enjoy it and I will learn to love you.

"Protect me in summer from the hot sun. Keep a blanket on me in winter weather and never put a frosty bit in my mouth, but hold it in your hands a moment first.

"I carry you, pull you, wait patiently for you long hours, day or night. I cannot tell you when I am thirsty; give me clean, cool water often in hot weather.

"Finally, when my strength is gone, instead of turning me over to a human brute, to be tortured and starved, take my life in the easiest and quickest way, and your God will reward you in this life and in heaven. Amen."—*Our Dumb Animals*.

The above is taken from the *New York Globe*. The horse can hardly be expected to know what kind of axle grease is used on the wagon, but he can tell the difference between the wagon that draws easily and the one that moves hard. He therefore will appreciate, even though he has neglected to mention it in his prayer, the use of Dixon's Graphite Axle Grease. It will help him to do his work. The value of this axle grease, as all users know, lies in its base, Ticonderoga flake graphite, the very finest solid lubricant known to science or practise. This lubricant cannot be duplicated in any other grease, and that is why Dixon's Axle Grease cannot be duplicated.

FURTHER COMMENTS ON BUYING PRINTING

Elsewhere in this issue of GRAPHITE will be found an interesting article on "Buying Printing." In buying printing or in buying clothing, the buyer should not expect to receive the same quality of goods from the fifteen dollar shop that he will from the forty dollar shop. Even if the fifteen dollar printer has an equally good press and equally good paper, he cannot and does not attempt to employ the same degree of skilled labor. He probably employs a fifteen dollar per week pressman instead of a fifty dollar per week man who understands the art of overlay and underlay, without which true and uniform presswork cannot be obtained. So it is with the fifteen dollar tailor—that man cannot afford to pay the high price demanded by the skillful cutters, fitters and makers. The fit of a coat frequently depends quite as much on the maker as the cutter.

As Mr. Snyder points out, if you want the benefit of experience, skill, care and service, without which the best materials often avail little, you must expect to pay for it, and it will prove the best investment.

DIXON's graphite publications sent free upon request.



SPALDING BUILDING, PORTLAND, ORE.

The building shown in course of construction above is one of the modern structures recently erected in Portland, Ore. The building contains 1400 tons of steel, for the protection of which Dixon's Silica-Graphite Paint was specified and used. Cass Gilbert was the architect for this building; the Riter-Conley Manufacturing Company were the steel contractors, and James Stewart & Company were the general contractors.

The West is making headway fast, as is proven both by their building operations and their recognition of Dixon's Silica-Graphite Paint.

TO BE REMEMBERED

By the Man Who Owns an Automobile

Every moving part of a car will be the better for a proper treatment with flake graphite.

Squeaky springs are an annoyance that may be easily remedied, by simply lifting the body of the car so that the chassis hangs by the springs, and working in between the leaves a mixture of flake graphite and oil (about the consistency of thick cream) with a knife blade. The leaves will then slide easily over one another, the squeak will be cured for practically all time, and corrosion will not take place.

Wheel bearings, whether of the plain, ball, or roller type, should be packed with Dixon's Graphitoleo. Remove the cap and fill brimming full. This will supply the wheel bearing with lubrication for some 600 to 1,200 miles.

It will be understood that Dixon's Motor Graphite may be supplied with oil to almost every part of the machine. A dry oil can or a "bug gun" should be filled with the graphite and used when oiling up.

Wherever a light grease is indicated for lubrication, as for slides, guides, and so forth, Dixon's Graphitoleo should be used. This can be secured in collapsible tubes that make it convenient for the motorist.

For threaded connections nothing can equal Dixon's Graphite Pipe Joint Compound. Not only does it make all joints perfectly tight, but it allows of ready disconnecting whenever desired. These two vitally important, yet widely opposed features, are combined best in Dixon's Pipe Joint Compound. It is equally useful for steam, water and gasoline piping. This product also comes in collapsible tubes.

This same product will prevent trouble with sticking spark plugs, if smeared on the threads. Also recommended for nuts, bolts, studs and the like. In every case it prevents rust, resists corrosion of all kinds, and makes removal easy.

Dixon's Motor Graphite, well rubbed into the valve seats and on the valve stem guides, will prevent leaking and sticking.

The lubrication of transmissions designed to be lubricated with oil, will be improved by the addition of flake graphite.

Flake Graphite and oil mixed with grease will make the rear axle bevel run smoothly and quietly.

Keep the seats of tumble shaft well packed with hard oil, or hard oil and graphite.

The clutch center should be supplied with a small quantity of oil every morning. It is well to mix a little Dixon's Motor Graphite with the oil occasionally.

The surfaces of a constriction band clutch should occasionally be given a few drops of the mixture of Dixon's Motor Graphite and oil.

Clutch shifter trunnions should be oiled daily with a few drops of heavy oil. Motor graphite should be mixed with this oil.

The universal joint should be packed with hard oil or grease to which flake graphite has been added. For most cars Dixon's No. 677 is very satisfactory.

For driving gears of magnetos use Graphitoleo or Dixon's Motor Graphite, mixed with heavy cylinder or machine oil.

Dixon's Graphitoleo can be used to advantage on the speed change sector.

Do not use any graphite for lubricating the commutator, as it will short-circuit the current.

Various motor car manufacturers recommend graphite for different parts of their cars, but of course, its adoption necessarily depends upon the type of car construction. We will be glad at any time to advise owners and users as to the adaptability of Dixon's Motor Lubricants for their machines.

Remember that Dixon's Motor Graphite, added in proper proportions to oils and plain greases, stimulates their lubricating efficiency.

A NEW FIELD FOR DIXON'S GRAPHITE

Count Zeppelin, nearly seventy-two years old, took personal charge of the first flight of his passenger airship on June 22, 1910. The distance covered was 250 miles and the time about nine hours. The event stands out as one of the mile-posts in aerial navigation.

Nothing is said about the lubrication, but since Dixon's Flake Graphite has proved its powers in every other mechanical field, we have no doubt that it will also make good here.



CHARING CROSS AND SHERLOCK HOLMES

Any reader of Sherlock Holmes knows Charing Cross Station—in fact no English detective story is complete without it apparently, since the new stories running in *McClure's* on "John Thorndyke," Sherlock Holmes' rival, make reference to it.

The above photograph shows a view of the station. This was kindly supplied to us by our London agents, Graphite Products, Limited. A booklet gotten out in this connection states that ten million passengers annually use this station. In another part of the booklet referred to there is reference made to what we presume is the comparatively recent construction of tube railways. A statement is made that completed electrification and construction of the Baker Street (more memories of Sherlock Holmes) and Waterloo Tube Railway, the Great Northern, Piccadilly and Brompton Tube Railway, and the Charing Cross, Euston and Hampstead Tube Railway, have all been open to traffic for some time. The total amount of structural steel work contained in these lines, including the Chelsea Power House, sub-stations, etc., was over 30,000 tons, all of which was painted with—

"Dixon's Silica-Graphite Paint," said Holmes calmly as he filled up his favorite pipe with some of his vile tobacco.

"How do you know?" asked his faithful friend and chronicler, Dr. Watson.

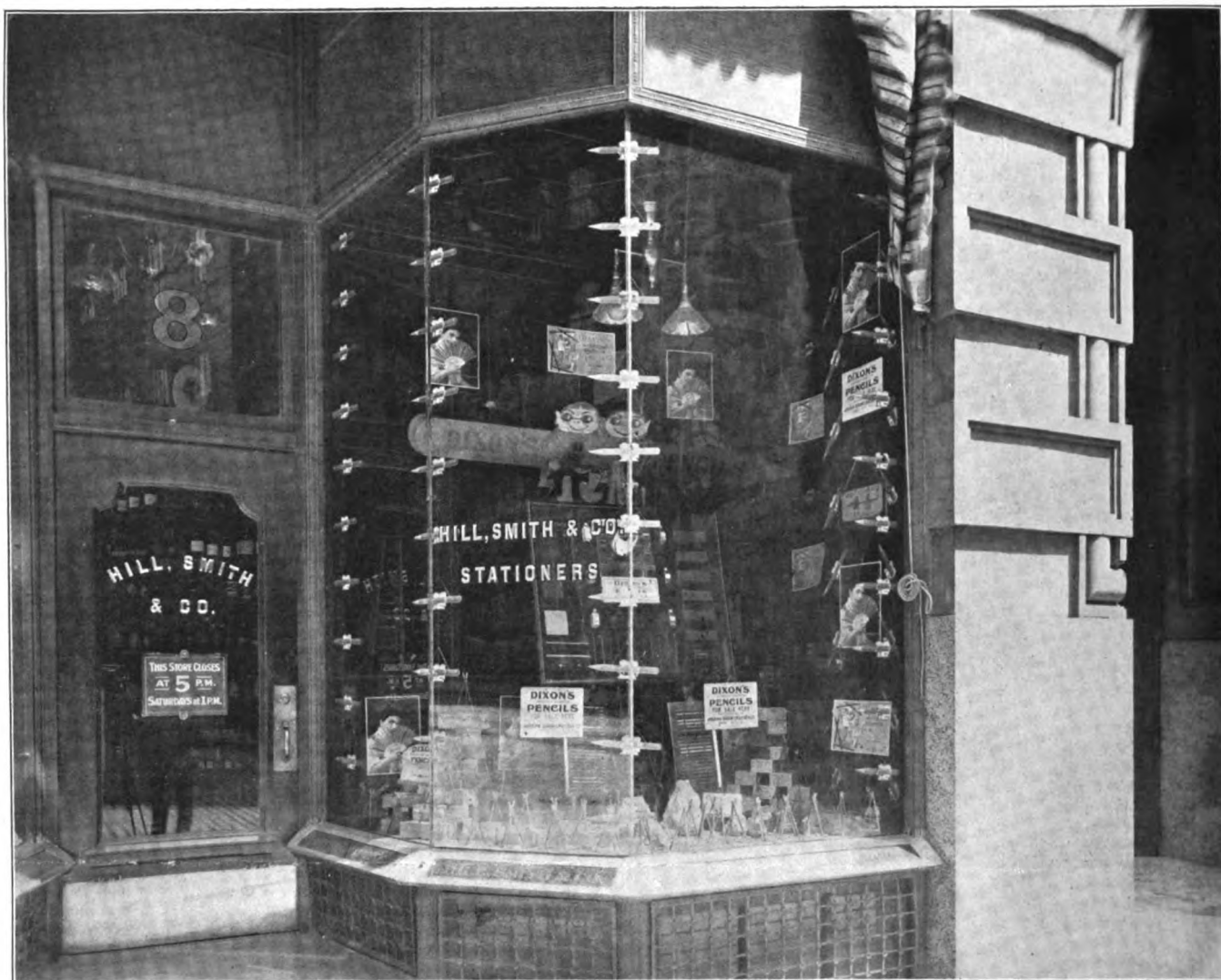
"Analyzed some scrapings," laconically replied the great detective.

"Well, what did you find?" pursued Dr. Watson.

"An inert pigment, a combination of silica and graphite. The vehicle used is pure double boiled linseed oil. The pigment is found in only one place in the world, coming in natural combination from the Dixon Company's mines at Ticonderoga, State of New York. Since no chemical combination occurs between Dixon's pigment and the vehicle, the oil film is left unimpaired and can devote its entire resisting power to withstanding destructive outside influences. An active pigment tends to destroy the 'life' of the oil vehicle—thus an active pigment paint is attacked from both the inside and outside."

From which it will be seen that Sherlock Holmes knows something about paints.

AN experienced motorist suggests the introduction of graphite into lubricating oil, in the proportion of about a teaspoonful to a quart of oil, claiming that it builds up even the most microscopic irregularities on bearing and wearing surfaces of pistons, rings and cylinders, resulting in better lubrication in cylinders, better compression and a saving of oil. He recommends flake graphite.—*Automobile Topics*.



Photograph of Dixon Pencil Exhibit in one of Hill, Smith & Company's Windows Arranged for Dixon's Boston Office.
This Store is Located in the Heart of Boston's Business District and the Dixon Display
has Attracted the Attention of Thousands of Pencil Users

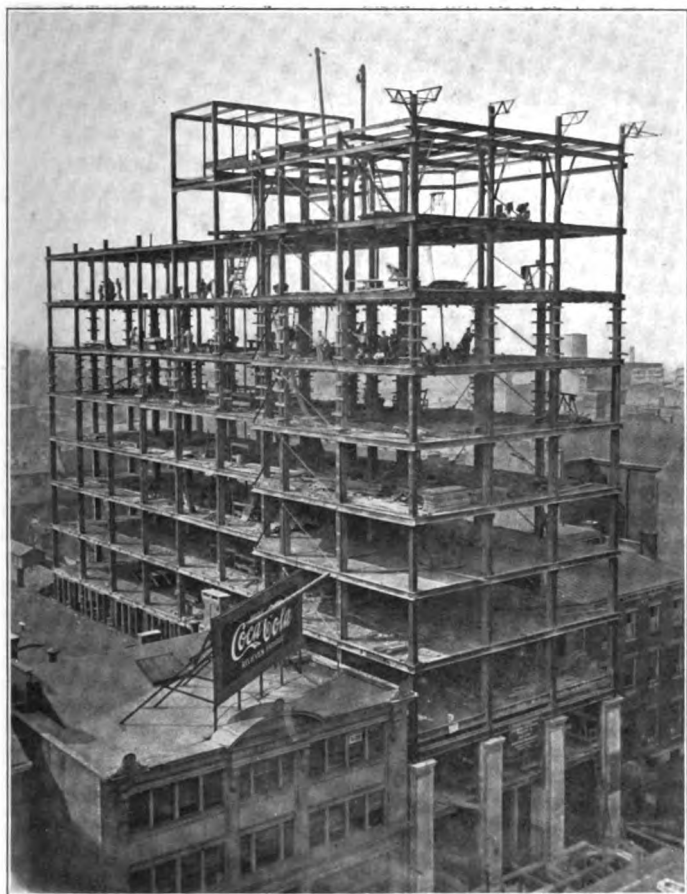
GRAPHITE IN CYLINDERS

Graphite, known to the trade by the names of plumbago and black lead, will prevent cylinders in explosive motors from fouling. If the right grade of graphite is used, and if it is applied according to directions, the piston rings will work easier and never become stuck. The function of graphite as a lubricant is to get right at the real cause of friction by eliminating it. No matter how carefully the metal surfaces may be polished, when examined under a microscope, there are always to be seen minute irregularities which have all the appearances of hills and valleys of irregular shape. Flake graphite fills in the depressions, becomes attached to the elevations, and forms over all a thin, tough, veneer-like coating of marvelous smoothness, thus preventing metallic contact; and it has been proven by actual experience that when finely pulverized flake graphite is used with oil for cylinder lubrication, there is smoother running, better compression. Stuck pistons are unknown. Graphite may be introduced into the cylinders by removing the side plate of the crankcase, or by mixing thoroughly graphite and oil (in the proportions of a scant teaspoonful of the former to a pint of oil), and pouring

the mixture down the vent pipe. Some have successfully introduced graphite into the cylinders by removing the spark plug and squirting a small amount of the graphite through the aperture. To do this, use an ordinary insect gun, or a quill with a rubber tube attached to it, and when the last method mentioned is used, fill the quill by inserting it into the graphite, then by blowing through the tube the graphite will be discharged. The only care which has to be exercised in the use of graphite in cylinders is to employ it sparingly, and for best results in the proportion of a scant teaspoonful to a pint of oil. When too much graphite is used, the lubricant will become viscous and the graphite unevenly deposited.

—*Nautical Gazette*.

WE READ that Daniel O'Connell of Corunna, Mich., is 106 and walks twelve miles to a neighboring village every week to replenish his supply of liquor and tobacco, the quality of which commodities, he declares, has deteriorated since he began to use them ninety years ago. Wonder what he would say on the breakfast food question, and if he is in favor of vaccination and woman suffrage or against them.



**THE JUNIOR AMERICAN MECHANICS' BUILDING,
TRENTON, N. J.**

The above photograph shows the ten story building erected for the Junior Order of United American Mechanics, in Trenton, belonging to N. A. K. Bugbee & Company. This is the largest office building to date in Trenton.

The architect was H. J. Blauvelt of Philadelphia; general contractor, James W. Lanning of Trenton; iron contractors, Belmont Iron Works, and the iron erectors were Newton A. K. Bugbee & Company, both of these firms last mentioned being also of Trenton.

Two coats of Dixon's Silica-Graphite Paint was specified by Mr. Blauvelt for this job; Natural Color being used for each coat. The shop coat was applied by the Belmont Iron Works and the field coat by Bugbee & Company.

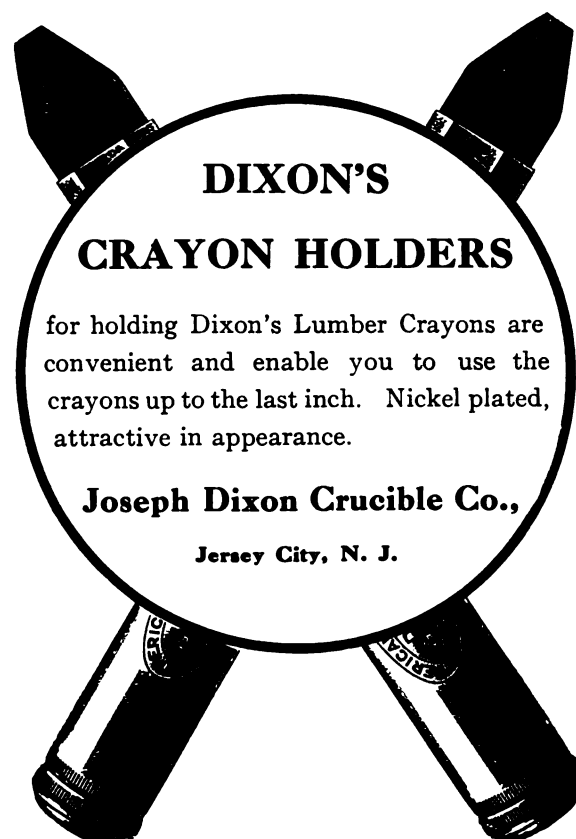
LACK OF INVENTIVE FACULTY

**Or Inventive Faculties that are Unresponsive to the Efforts
to Differentiate**

Judge Lacombe of New York in deciding a case lately said: Defendants present the usual voluminous bundle of affidavits by persons in the trade to the effect that in their opinion no one is likely to mistake defendant's goods for complainant's. As has been often pointed out before, it makes no difference that dealers in the article are not deceived. No one expects that they will be. It is the probable experience of the consumer that the court considers. Here, too, we have the manufacturer of the articles complained of, who explains, as usual, that, in adopting a trade-name by which to identify his own product, he has been most "*careful not to trespass on*

any rights" of complainant, and that "*after considerable thought*" he selected a name which should make the difference between his goods and complainant's "*distinct and plain, so that there could be no possibility of mistake.*" It is a curious fact that so many manufacturers of proprietary articles, when confronted with some well advertised trade-name or mark of a rival manufacturer, seem to find their inventive faculties so singularly unresponsive to their efforts to differentiate.

The manufacturer of the articles which defendants in the case at bar are selling, seems to have had no better luck, for, with the word "Uneeda" before him, his device to avoid confusion was the adoption of the word "Iwanta." The incessant use of the personal pronouns in daily speech has associated in every one's mind the sounds represented by the letters "I" and "U"; the two words are precisely the same length; both end with the same letter, "a"; and both express the same idea, namely, that the prospective purchaser's personal comfort would be promoted by the acquisition of a biscuit. There are, as is also usual, a number of minor differences between the forms and the dress of the two packages, which are expatiated upon in the affidavits and the brief, but no one can look at both packages without perceiving that there are strong resemblances, which could easily have been avoided had there been an honest effort to give defendant's goods a distinctive dress. Both name and dress are clearly calculated to mislead, and the statements that both were adopted with an eye single to differentiation strain the credulity of the court beyond the breaking point. Complainant may take a preliminary injunction against the use of the trade-name "Iwanta," and of the present style of package; also against similar colorable imitations of complainant's trade-name "Uneeda," and of his style of package.



ARTHUR C. BOWLES

Manager San Francisco Branch, Joseph Dixon Crucible Company

The photo here shown is not as good a likeness of Mr. Bowles as we should like to present to our readers; it does not do him justice. While Mr. Bowles comes under the head of strenuous men, yet he always has a very pleasant smile, except of course when he is having his picture taken.

Mr. Bowles came with the Dixon Company in 1902. He was attached to the San Francisco Office as salesman, traveling in Southern California. As his knowledge of the goods of the Dixon Company increased, his territory became larger until finally he covered Arizona, New Mexico and El Paso, Texas.

In 1904 Mr. Bowles made a very successful business trip to the Hawaiian Islands, and has made that trip each year since.

In 1906 Mr. Bowles was given the Republic of Mexico as additional territory, and a little later the same year he was given the entire state of Texas to look after.

A year later Mr. Bowles was given the full management of the Republic of Mexico, Texas, Arizona, the lower part of California, and the Hawaiian Islands.



ARTHUR C. BOWLES.

His records were so good that it finally led up to Mr. Bowles' appointment as manager of the San Francisco office, which management now carries with it not only the old-time territory of the San Francisco office, but also of that covered by Mr. Bowles during the past few years.

Mr. Bowles is at the top of active young life, not having as yet fully completed his one score and ten.

It may not be out of place to mention that Mr. Bowles is a thirty-two degree Scottish Rite Mason and a Shriner.

It has been our custom, as the old-time readers of GRAPHITE will know, to give a size-up of our young men from a phrenological point of view, and we are enabled to do this through the courtesy of Messrs. Fowler & Wells of New York, who have a world-wide reputation in these matters.

With the photograph in hand the character reader has this to say:

"The photograph of this gentleman indicates that he has a very strong personality. He is the man to do things, or get them done, not the one to allow impediments and difficulties

to stand in his way. He has both an executive brain that attends to business matters, and a philanthropic brain that takes pleasure in superintending affairs that have the well being of the masses at heart. He is a man of generous impulses, which is easily recognized through his large organ of benevolence which soars high above his intellect in a remarkable way.

"He is capable of carrying in his mind's eye a large amount of business, and his comprehension of plans, ideas and principles is phenomenal.

"The prominence of the upper part of his forehead makes him a man of reflection, deep thought and ready discernment of character.

"Resourcefulness is another characteristic of this gentleman, which is shown by the width of his temples. While he may not care to get down to the details of mechanical work himself, he would make an excellent superintendent of work that had to be done by men who were ingenious and mechanical.

"In some things this gentleman is slow and deliberate, which makes his rapidity of thought all the more noticeable in other ways. He never likes to have to do a thing over again if it can be done right at first.

"The expression of his mouth and eyes, together with his large Comparison, shows that he is a man of keen criticism. He lets nothing pass his mental vision that ought to be attended to. In fact, he is very particular to have everything exact. He will not have any careless workmen around him.

"He suits his language to the occasion, and always speaks to the point. Some English extraction appears to be strongly accentuated in his organization and his large Veneration is a further indication of Anglo-Saxon ancestry. He does not trouble so much about forms and ceremonies, but he does like to have respect shown to elderly people and those who have definite knowledge about things.

"Sublimity enables him to enjoy handling large concerns or large wholesale orders in business. He would not cross the street to attend to a small detail, but he will take infinite pains and be willing to travel the length of the globe to establish an international business."

We consider this a very nice reading and naturally we shall expect him to live up to it.

MORE APPRECIATION OF DIXON'S ENGINE FRONT FINISH

**DANVILLE AND WESTERN RAILWAY COMPANY
OFFICE OF SUPERINTENDENT**

DANVILLE, VA., May 19, 1910.

Joseph Dixon Crucible Company,

1020 Arch Street, Philadelphia, Pa.

GENTLEMEN:—In reply to yours of April 13, 1910, in reference to the test of the samples sent of Dixon's Engine Front Finish, beg to quote below from our master mechanic, Mr. J.O. Warthen:

"I have tested the Dixon's Engine Front Finish with the crude oil as sent last and it gives good results. We have been using it on engine No. 18 and it has the prettiest front end we have now.

Yours truly,

(Signed) THEO. PARKER, Supt."

BUYING PRINTING

By H. S. SNYDER

A friend of the writer's has quite aptly compared the printer with the tailor. If you want a \$15 suit you go to a \$15 tailor; if you want a \$40 suit you go to a tailor of \$40 calibre. Whether the average person can tell the \$25 difference between the two suits is a debatable matter, each side having its adherents, but the condition in the printing field is quite aptly illustrated by this comparison.

When you buy printing you purchase something more than materials—the same as when you buy tailoring. Of the best printers you buy a service that the cheaper printer cannot afford to give, nor should he be expected to. One phase of this service is the co-operative care on the printer's part to see that the matter is correct in every detail. For instance, the proofs will be carefully read at the printer's not only for typographical errors, but for grammatical ones as well; in fact, the best service will also include appropriate queries on statements of fact.

Coming down to such matter as the "hard headed business man," if you please, will consider, we arrive at the materials. Let's take first the type. "The \$40 printer" is one who throws all his battered and damaged type into what is expressively, though inelegantly, termed the "hell-box." Then as to the paper. It is usually considered best practise to use a grade of paper consistent with the spirit and motive of the matter to be printed. Thus, for instance, if you are getting out a standard high class catalog of ordinary size in which fine half-tones will appear, it is economy to use a first grade coated stock. Your "\$40 printer" will no doubt have had the experience and possesses the intelligence to help you in the selection of your paper and will conscientiously use that paper where a less reliable man might be tempted to substitute a cheaper grade. There is a wide range in the quality of inks too.

Then there are a number of what may be considered minor considerations, but all of which enter into the high grade piece of printed matter. Among these is the make-ready. This is the process of preparing the press and type or plates so as to get the proper impression. In many cases, especially where delicate half-tones are used, this is a somewhat laboriously tedious operation which the "\$15 printer" may slight. This printer may likewise be a little careless in imposing, cutting or binding the matter, so that the margins do not run evenly.

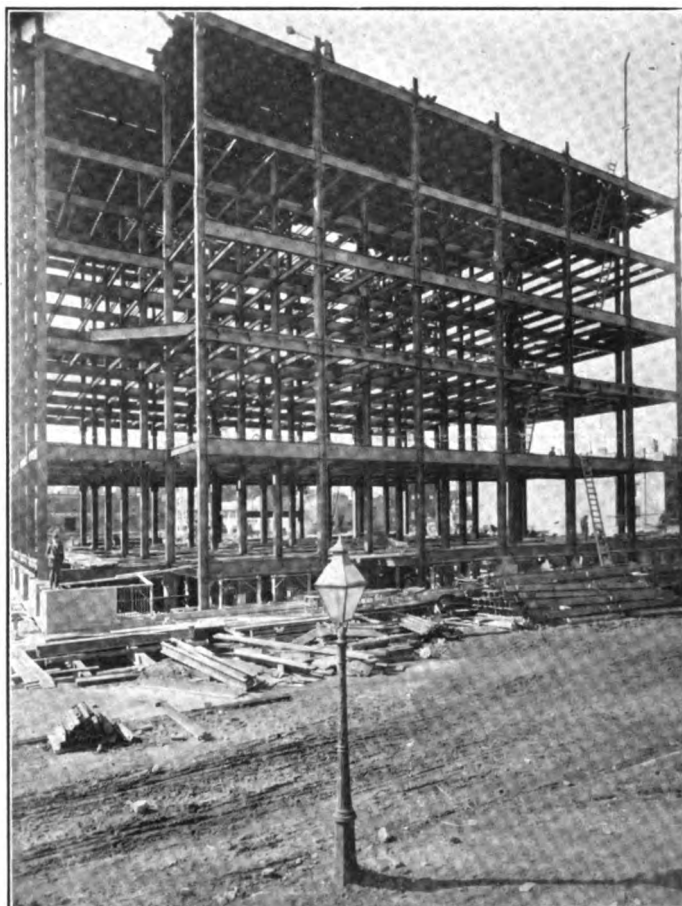
Very frequently in printing on colored cover stock it may be necessary for best printing effects to run the matter through twice or perhaps three times. The "\$40 printer" will exercise an intelligent discretion in this case and run the matter through the press as many times as is necessary to give the proper effect.

There is one other consideration that bears on printing bills that is up to the customer rather than the printer, and that refers to the corrections in the proof. When matter goes to the printer originally it should be exactly as you want it. Do not prepare it carelessly with the idea that you will correct it later; add to and take out, re-arrange, etc., because this "pastime" is more or less expensive. What appears to you like a very simple change may in some instances result

in an hour's work on the part of the printer, and each hour's work will cost you in the neighborhood of eighty cents. On a fairly large piece of work, corrections might easily run from \$25 to \$100. One case is reported by an advertising manager on an elaborate piece of work where charges for corrections amounted to \$631.40. If you are looking to economical efficiency, avoid these corrections by exercising care in the original preparation of your copy.

We want to repeat in closing that you buy more than materials in buying printing when you buy good printing. You buy experience, discretion, practical efficiency, co-operative care and service, and as in every other field, you pay for these things or you fail to get them.

SHEPHERD WAREHOUSE, CHICAGO, ILL.



The above photograph shows the Shepherd Warehouse in course of erection. This warehouse is a good sized one, there being used in its construction 975 tons of steel.

The architect for this structure was H. L. Ottenheimer; the engineer was J. H. Heuser, while the Brown-Ketcham Iron Works were the steel contractors, and Oscar Daniels Co. were the erectors. Two coats of Dixon's Silica-Graphite Paint were used for the protection of the steel; Black being applied for the shop coat and Dark Red being used in the field.

As we go to press, Mr. George T. Smith, President of the Dixon Company, is enjoying the natural beauty of France for which he and his family sailed on July 9th. The first stop is Contrexville, and the itinerary includes Munich, Oberammergau, Tours and Paris. Mr. Smith will return about October 1st.



MASTER MECHANICS' AND MASTER CAR BUILDERS' CONVENTION

The Master Mechanics' and Master Car Builders' Convention was held as usual at Atlantic City, whose sea breezes and boardwalk age cannot wither nor custom stale.

The Dixon Company was as usual represented, and the above picture shows a view of the booth and some of the members of the Dixon staff. Beginning at the reader's left is Mr. J. J. Tucker, who takes special charge of the railroad work in the Philadelphia territory. Next to Mr. Tucker is Mr. H. W. Chase, whose activities are chiefly in railroad work in the home office territory. Next is Mr. Wm. J. Coane, manager of the Philadelphia Office. Seated at Mr. Coane's left is Mr. George T. Smith, President of the Dixon Company. Next is Mr. H. A. Nealley, manager of our Boston Office, which covers the New England territory. Mr. R. R. Belville, in charge of the Paint Department of the Philadelphia Office, is seated next to Mr. Nealley. Mr. F. R. Brandon of the Chicago Office is next, and Mr. L. H. Snyder, of the home office, who has charge of the Lubricating Department, is the right hand end man.

The Dixon line includes a wide range of products in which the railroads are interested. For the office we have pencils and erasers. In the shop Dixon's Dry Flake Graphite and Greases are widely used for lubrication, and Dixon's Pipe Joint Compound and Belt Dressing find considerable to do here. The locomotive engineer also uses our Flake Graphite to make things easier for him in the way of lubrication. In addition, Dixon's Graphite Air Brake and Triple Valve Grease is used on the air brake system which means so much to the train service. On the front of the engine Dixon's Graphite

Engine Front Finish is used both to preserve it and render it attractive in appearance. In the railroad foundry, Dixon's Facings and Crucibles are used, such use increasing efficiency and economy in the foundry practise. For the maintenance of structures, buildings and bridges of every description, Dixon's Silica-Graphite Paint is used. For steel cars Dixon's Silica-Graphite Paint prepared especially for this service is employed.

A very unique feature of the exhibition booth was an automaton representing the Dixon Brownie Twins, who carried on a little conversation by means of printed signs. The automaton may be seen at the right of the picture.

After the convention all the Dixon boys returned to their respective headquarters, tired but happy. Each year seems to be just a little better than the one preceeding. Each year old acquaintances are renewed and new friends made. Each year Dixon's Graphite Products for railroads become more extensively used.

WHY DO THE ROOSTERS CROW?

A Northern man in Florida writes to the *New York Times* for information. He says the roosters in Florida crow at all hours of the night, one rooster will start in with his solo and then all the others will join in, the area of crowing spreading rapidly. He adds, "This all night crowing does not obtain in the North, and I am not a little puzzled over it. The natives cannot explain it. Can you?" To which the *Times* replies:

"The further South you go the more the roosters crow. In Virginia they crow for about two-thirds of the night, in South Carolina about three-fourths, and, as you truly say, in Florida they never stop. We do not know why."

TEDDY UNT ME UNT GOTT

(A REVISION)

Der Kaiser of dis Vaterlandt
Unt Gott on high all dings commandt—
Eggsept, of course, you understandt
Dere's Teddy.

It used to be dot me unt Gott
Could run der vorldt as vell as not,
But now of help ve get a lot
From Teddy.

Who told us two unt two makes four,
Unt neffer either less or more,
Unt all about our ancient lore?
Vy Teddy.

Who sait to me, "I like you, Bill?"
Who helped me not to keep right still
Unt talk of animals to kill?
Dot Teddy.

Who told me vat mein army needs,
Unt how words doesn't count mit deeds?
Who valks unt talks der vile he reads?
Dot Teddy.

Who told me dings I neffer knew?
Who told me vat I ought to do
Unt how to say "Dee-lighted!" too?
Dot Teddy.

Dare iss no bleak unt lonesome spot
Vich ve don't cheer—I tell vou dot!—
Der vorldt iss bossed by me unt Gott—
Unt Teddy.

—JEFFERSON TOOMBS in *Harper's Weekly*.

BEARINGS SUPPLIED WITH GREASE CUPS

All bearings that are supplied with grease cups should be lubricated with Dixon's Graphite Cup Greases. These greases are prepared in six degrees of hardness numbered: 0, 1, 2, 3, 4, 5. No. 0, the softest, is about the consistency of soft vaseline; No. 5, the hardest, has a consistency about that of tallow.

The softer grades are valuable for light, high speed shafts; the harder grades for heavier pressures. These greases have the lubricating qualities of the best mineral oils, being fluid upon reaching the journal, and at the same time offer simple, cleanly, and economical application because of their semi-fluid form.

All grades may be fed through compression cups, the softer grades are often used in open bearings. The consistency of each grade changes but little under wide temperature variations.

For bearings that are exposed to heat from the cylinders, we advise the use of Dixon's Graphite Grease, No. 676. This lubricant resists great heat, yet may be fed through a compression cup even at ordinary temperatures.

Dixon's Motor Graphite may be used in connection with oil to lubricate all bearings requiring oil lubrication. Small quantities only are needed; never more than 10 per cent. by volume.



FROM OUR BOSTON OFFICE

We reproduce here some matter that appears on a card sent out by Mr. H. A. Nealley, the enterprising manager of our Boston Office. It shows the John Hancock Building, in which the Boston Office is located, and fulfills the object of a piece of general advertising matter and an announcement to the trade at one time.

OPPORTUNITY—CHICAGO'S VERSION

We recently reprinted in GRAPHITE the more or less celebrated poem entitled, "Opportunity" by J. J. Ingalls, whereupon one of the young ladies at the Dixon Chicago Branch submits the following by Judge Walter Malone of Memphis, Tenn. We quote directly the closing sentence in the letter of protest. "Opportunity comes often to every man's door and no one need despair of a daily chance for achievement."

We like the Chicago Office optimism, and we believe they are right, too.

OPPORTUNITY

They do me wrong who say I come no more
When once I knock and fail to find you in;
For every day I stand outside your door
And bid you wake, and rise to fight and win.

Wail not for precious chances passed away,
Weep not for golden ages on the wane!
Each night I burn the records of the day—
At sunrise every soul is born again.

Dost thou behold thy lost youth all aghast?
Dost reel from righteous Retribution's blow?
Then turn from blotted archives of the past
And find the future's pages white as snow.

Art thou a mourner? Rouse thee from thy spell;
Art thou a sinner? Sins may be forgiven;
Each morning gives thee wings to flee from hell,
Each night a star to guide thy feet to heaven.

Laugh like a boy at splendors that have sped,
To vanished joys be blind and deaf and dumb;
My judgments seal the dead past with its dead,
But never bind a moment yet to come.

Though deep in mire, wring not your hands and weep;
I lend my arm to all who say 'I can!'
No shame-faced outcast ever sank so deep .
But yet might rise and be again a man!



For the Gas Holder

you require a paint that is capable of withstanding the conditions of alternating exposure to atmosphere and water.

To be sure that a certain paint *will do* this thoroughly, it is best to know what it *has done* in this service.

Just such an investigation as this is what we shall be glad to have you give

Dixon's Silica-Graphite Paint

The pure linseed oil and inert pigment, silica-graphite, enable this paint to give unexcelled service for this class of structure. A special circular free to you on request.

Joseph Dixon Crucible Company,
Jersey City, New Jersey.

20 GR Stack

GRAPHITE


VOL. XII.

SEPTEMBER, 1910.

No. 9.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

A WARNING TO AMERICAN MANUFACTURERS



American manufacturers are warned that it is against the law in Australia to import goods made wholly or in part by prison labor, and the Customs authorities in construing the law, hold that any company which makes any use at all of prison labor or has any arrangements whatsoever with prisons for the manufacture of goods, cannot be permitted to send any of its products to Australia.

Manufacturers who have emphasized in their advertisements their non-connection with any goods made by prison labor have reaped advantage.

Canadian manufacturers seem to have produced articles for the Australian market of equal utility and cheapness and of even better finish

than the American article, and have made a very favorable impression as a result of the care exercised over details in appearance, in the way of attractive finishing and labeling and especially in the assurance by such manufacturers that they have no connection with prison labor.

American manufacturers should also take notice that the Customs Act of Australia provides that in determining the values of dutiable goods imported, the values taken shall be the fair market values in the principal markets of the country from whence exported. American goods that are invoiced to Australian buyers at prices below what they are sold for in the United States, are liable to be held up by the Australian Customs officials.

It is further understood that the Customs officials are now investigating alleged cases of American companies exporting goods to Australia at a cheaper price than selling for at home, and if as the result of such inquiries, it is found that this practise is followed, in each case action will be taken to disbar such goods unless the values are raised as the facts warrant.

It certainly will be to the interest of American manufacturers to ascertain from the Department of Commerce and Labor at Washington the exact rules and regulations.

A PROMINENT engineer of Palestine, Texas, says:

"I have used the Dixon Pure Flake Lubricating Graphite continuously for the past fifteen years and have always found it most satisfactory."

SELLING OF GOODS

We have from time to time cribbed from various sources good stuff relative to the selling of goods, and this time we shall crib from a letter received from the manager of the Chicago Branch of the Joseph Dixon Crucible Company, Mr. Sam. Mayer.

Mr. Mayer has had not only many years of managing salesmen, but is a salesman himself, A-1, top notch.

"In plain English," says Mr. Mayer, "we force in a nice way the jobber and the dealer into handling a certain line of goods. We have pursued this policy here for years, and successfully."

"Mr. Poole in *System* says, 'the manufacturer must go to the shopkeeper simultaneously with the launching of his publicity and must gain the favor of the dealer, etc.,' which is so. In other words, when a new article is put out, or an old article being pushed direct to the consumer, the order being turned over to the dealer, then it is necessary to have a base of supplies."

"It also stands to reason that where a new line is pushed and the dealer persuaded to stock same, the manufacturer should be willing to exchange in case certain goods are not as readily sold as expected. This is only fair. This is a big country and certain kinds of goods go in one territory and not in another and vice versa, so it is very easy where the goods are staple to arrange the matter amicably without loss either to the dealer or to the manufacturer."

"There is one point that is not covered in Mr. Poole's article in *System*, and that is, the manufacturer in putting out goods must invariably give the dealer or the consumer as much value for his money as any competitive manufacturer."

GRAPHITE ABOUT THE HOUSE

Graphite, while a solid, has marked lubricating properties. Mixed with oil it is frequently used on heavy machinery. Its value is due to the fact that the small flakes become packed tightly into any depressions in the bearing surfaces, making them very smooth. A lead pencil is in fact a good substitute for an oil can in many cases. It will almost certainly stop the squeak of a door-hinge if the graphite can be worked into the rubbing surfaces. Raising the door slightly will assist in this work and may be easily done with a lever placed under it and pressed down with the foot.

In this age of steel, we must all become more or less engineers to properly care for and operate the machines which are coming more and more to be a necessity in our daily lives. Lubrication is just as necessary for a bed caster which is to perform its work satisfactorily, as for the engines of the ocean liner.—H. L. WHITEMORE in *Ladies' World*.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

OFFICERS:

President—GEORGE T. SMITH
Vice. Pres & Counsel—WILLIAM H. CORBIN
Treasurer—GEORGE E. LONG
Secretary—HARRY DAILEY
Ass't Treas. & Ass't Sec'y—J. H. SCHERMERHORN

DIRECTORS:

GEORGE T. SMITH	WILLIAM H. CORBIN
GEORGE E. LONG	EDWARD L. YOUNG
WILLIAM MURRAY	HARRY DAILEY
WILLIAM G. BUMSTED	

OFFICES AND SALESROOMS:

NEW YORK SALESROOM, 68 Reade Street.
 PHILADELPHIA SALESROOM, 1020 Arch Street.
 SAN FRANCISCO SALESROOM, 145 Second Street.
 CHICAGO OFFICE, 1324 Monadnock Block.
 BOSTON OFFICE, 648 John Hancock Building.
 PITTSBURG OFFICE, Wabash Terminal Building.
 ST. LOUIS OFFICE, 501 Victoria Building.
 WASHINGTON, D. C., OFFICE, 1410 H Street, N. W.
 BALTIMORE OFFICE, 1005 Union Trust Building.
 BUFFALO OFFICE, 72 Erie County Savings Bank Building.
 ATLANTA OFFICE, Fourth National Bank Building.
 EUROPEAN AGENTS,
 Graphite Products Ltd., 218-220 Queen's Road, Battersea, London.

GRAPHITE PRODUCTS, LIMITED

In Europe, Asia, Africa and Australasia the Joseph Dixon Crucible Company is represented by Graphite Products, Limited, whose offices are at 218-220 Queen's Road, Battersea, London, S. W.; Mr. W. H. Knowles, chairman, Mr. George W. Wollaston, managing director.

During the many years that the Joseph Dixon Crucible Company maintained its own office and warerooms in London, Mr. George W. Wollaston was the representative, and today under the new and independent management of Messrs. Knowles & Wollaston, Graphite Products, Limited, is pushing the sale of Dixon's graphite goods throughout the foreign countries mentioned.

THE WEATHER

What is the good of kicking about the weather? We get about an average assortment of weather each year, so many degrees of heat and so many of cold and so many inches of rain. Perhaps there would be fewer complaints about the weather if this fact was kept in mind.

Most persons forget the good weather they have had and grumble about the beastly kind they are getting, but after all there are more sunny days than stormy days.

THE INK WELL THAT NEVER NEEDS REPLENISHING

Always Ready for Use—Never Needs Refilling—Signs Checks—
Writes Prescriptions—All the Functions of Ink, but not
the Troublesome Features

A prominent contractor writes under date of July 15:

I am in receipt of your samples, for which I beg to thank you. I am also glad to learn that there is such a pencil as Dixon's Eterno; in future it will be me for Dixon's Eterno and Dixon's Eterno for me.

Time out of mind I have been frustrated by persons going to sign and give checks, etc., but they would not have a pen near at hand. The customary excuse was, "I will send it from the office to-morrow."

Now the Dixon Indelible will fill the bill and can be used for all ordinary pen and pencil purposes.

BENEFITS OF ADVERTISING

Arthur Brisbane, journalist, says that a man who advertises a business properly, is a distributor and helps to economize for the consumer or buyer.

He says that a man who manufactures a million articles and advertises them, can sell them cheaper than a man who makes but a thousand and doesn't advertise.

Many people think they pay more for an article that is advertised, when in fact they pay less and are protected.

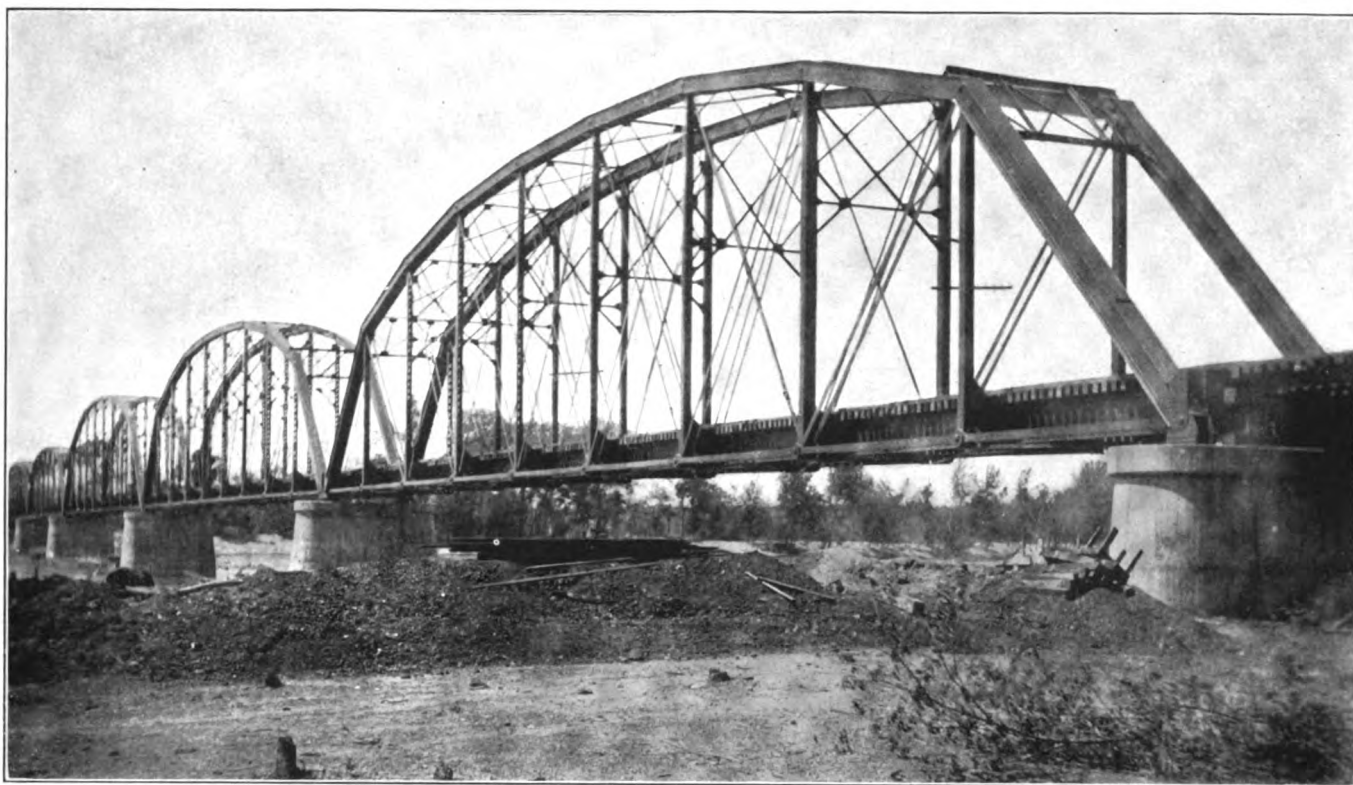
A man who spends ten million dollars in advertising is building a reputation on a solid and lasting foundation. It is the same as if he bought bricks and erected a building.

A man who has advertised and made such a reputation, can no more afford to be false to his word and lose that reputation than he could afford to set fire to his building.

A man who has advertised well and who has in that way established a reputation, has that reputation behind every statement that he makes. He has every reason to be just to his customers and must be just to himself and to other advertisers who are building up reputations.

WONDER IF WE ARE OLD-FASHIONED

Whenever we ask a manufacturer or bank relative to the credit of someone, we always enclose a stamped envelope for reply. Lately we have been getting quite a number of inquiries from manufacturers for information relative to credit and standing of parties here and there and somewhere else, but no stamped envelope for return reply is enclosed. Has it gone out of fashion?



MIDLAND VALLEY RAILROAD BRIDGE

The above illustration shows the Midland Valley Railroad Bridge, which crosses the Canadian River about forty miles east of Muskogee, Okla.

The weight of the bridge is given as over 1150 tons. It consists of five spans, three of which are 256 feet, 6 inches long; the remaining two being 203 feet long. In order that the railroad might get the longest possible protective paint service for this bridge, Dixon's Silica-Graphite Paint was used.

In connection with this structure should be mentioned the names of Charles Kaighn, chief engineer of the road; Boller & Hodge, engineers; Pennsylvania Steel Company, steel contractors, and the Missouri Valley Bridge & Iron Company, sub-contractors.

LUBRICATION THE LIFE OF AN AUTOMOBILE

We read in one of the trade papers that lubrication has more to do with success in the maintenance of an automobile than the average man is likely to realize, and that there is an excellent chance for confusion of mind in dealing with the problem of lubrication.

One not accustomed to the situation might readily be led to the conclusion that the quality of the lubricant is about all that has to be taken into account.

Outside of a suitable mechanism for feeding the oil to the parts requiring lubrication and feeding the oil in a positive manner and in suitable quantities, comes the next consideration, which is the condition of the surfaces that are being lubricated.

If such surfaces are of high grade finish, such as one is more likely to find in foreign made machines, ordinary oil is pretty sure to be sufficient, but if the surfaces are not highly and most carefully finished, then some substance other than oil

is needed, and this substance is found, so far as science can determine, only in the thin flake graphite known as Dixon's Ticonderoga Flake Graphite.

This graphite, when applied to bearing surfaces, fills up the microscopical irregularities which seem always to exist to a more or less degree, forming a veneer-like surface of wonderful smoothness and endurance.

To return to the statement that lubrication has more to do with success in the maintenance of an automobile than the average man is likely to realize, we might add that proper lubrication is the very life of the automobile.

THE MAN FROM MISSOURI

A successful salesman stopped off at St. Louis the other day to interest a dealer in a new proposition. He pointed out its advantages, dwelling on the merits of the article and explaining the benefits of handling it. The dealer listened, but was not entirely convinced.

"What you say about your goods may be true," he said, "but you would naturally say that in any event—then," he added, "I am from Missouri, you know, I have to be shown."

"Well," replied the salesman, "it is impossible for me to 'show' you, in the sense that I understand your use of the term, unless you will see for yourself. It seems to me, however, that it is to every man's advantage to do a little looking on his own account and not wait for someone to come along to show him. The man that makes a practise of waiting to be shown, is apt to fall behind the man who is on the lookout for the good things."

The logic of the argument and its appropriate application impressed the dealer. The man from Missouri had been "shown" the weakness of his stand—he gave the salesman an order.

DIXON'S graphite publications sent free upon request.



**STATE NATIONAL BANK BUILDING,
LITTLE ROCK, ARK.**

This new bank building illustrated above, is one of the handsomest and best equipped office buildings in the Southwest. The 680 tons of steelwork it contains are protected with Dixon's Silica-Graphite Paint.

The State National Bank occupies the entire first floor, while the remaining ten floors are devoted to offices. George A. Mann was the architect for this structure, and the Gray Construction Company, contractors.

SOME PAINT ITEMS

Painting for protective purposes is in order at any time of the year.

For real protection for metal of all kinds and for wood as well, where a dark paint can be used, there is no paint that equals Dixon's Silica-Graphite Paint.

The only ingredients employed are pure boiled linseed oil, finely pulverized silica and Ticonderoga flake graphite.

A silica-graphite paint is superior in durability to any form of graphite paint, as the silica is to the soft graphite what the alloy is to the gold used for manufacturing watch chains, finger rings, etc.

Everyone knows that gold jewelry twenty-four carat fine would have short life, and the same is true of graphite paint without silica.

Graphite is impervious to the action of acids and alkalies, and silica has equal durability with the exception that it is susceptible to strong alkalies. Combined as it is with Dixon's Flake Graphite, and becoming coated as it does by the graphite, the two form an ideal paint for durability.

The large coal storage plant of the Philadelphia and Reading Coal and Iron Company, when erected over five years ago, was painted with two coats of Dixon's Silica-Graphite Paint. Only recently was it thought necessary to repaint.

About every five years the Wilkes-Barre Gas and Electric Company repaints their gas holders. They never think of using any paint other than Dixon's Silica-Graphite Paint because of its wonderful durability.

Dixon's Silica-Graphite Paint was applied to the inside and outside of the standpipe belonging to the Water Department of Lancaster, Pa. No repainting was done for over four years and then Dixon's Silica-Graphite Paint was used again.

Two coats of Dixon's Silica-Graphite Paint were applied to the stacks of the Niles-Bement-Pond Company, Philadelphia, and the guarantee made that the stacks would not need repainting for three years even under the severe conditions which existed. No repainting was done until five years after.

The severe conditions due to the sulphurous gases from the locomotives, made it necessary to select with the greatest care a paint suitable for the Wabash Terminal Trainshed at Pittsburg, Pa.

On the advice of those most experienced in the matter of protective paints, Dixon's Silica-Graphite Paint was applied. The structure was erected over five years ago and no repainting was done until recently, when Dixon's Silica-Graphite Paint was again used.

Testimonials like the above can be furnished until the count runs into thousands.

Dixon's Silica-Graphite Paint has been on the market for forty-five years. It has many imitators, but no equal.

No inferior oil is ever used, no adulterants ever permitted to enter into the paint. No second quality is ever made. It is the pride of the Dixon Company to offer only one quality, and that the very best. At double the price it would be the most economical paint to use. It costs no more than any first-class paint, not so much as some.

THE FOURTEEN ERRORS OF LIFE

The fourteen mistakes of life, Judge Rentoul told the Bartholomew Club of London, are:

To expect to set up our own standard of right and wrong and expect everybody to conform to it.

To try to measure the enjoyment of others by our own.

To expect uniformity of opinion in this world.

To look for judgment and experience in youth.

To endeavor to mold the dispositions of everybody alike.

Not to yield in unimportant trifles.

To look for perfection in our own actions.

To worry ourselves and others about what cannot be remedied.

Not to alleviate, if we can, all that needs alleviation.

Not to make allowances for the weaknesses of others.

To consider anything impossible simply because we ourselves happen to be unable to perform it.

To believe only what our finite minds can grasp.

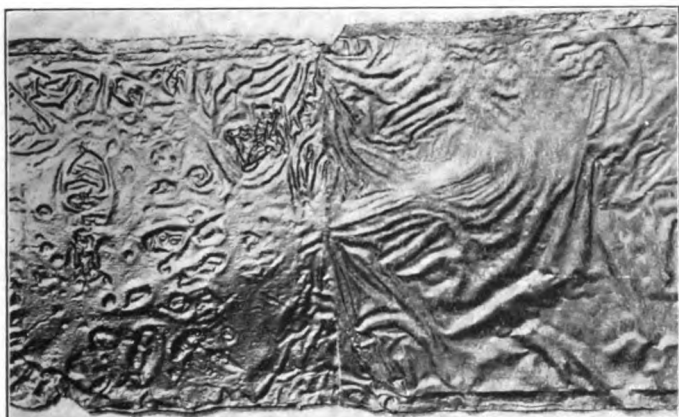
To live as if the moment, the time, the day were so important that it would last forever.

To estimate people by some outside quality, for it is that within which makes the man.—*Scrap Book*.

SILICA-GRAPHITE PAINT AND ACID

Corrosion is universally recognized as one of the worst known enemies of a paint applied to the surface of iron and steel, and rust on either side of the film means a certain and more or less rapid deterioration. The action of this corrosion seems to be that of cutting under the film of the paint and not only loosening, but causing it to disintegrate. Acid acts in the same manner as common rust to a certain extent, in that, besides making a direct attack upon the paint film, it has a peeling effect when it has come into contact with the metal. The rapidity with which this peeling takes place depends upon the strength of the acid and the vigor with which it attacks the metal as well as the resisting qualities of the paint film itself and its adhesion to the metal surface.

It appears from some experiments that have been made with the silica-graphite and steel car paints of the Joseph Dixon Crucible Company, Jersey City, N. J., that even a very strong acid may fail to have a direct effect upon the paint film, even though it be allowed to attack the painted metal surface and to ultimately remove it.



PAINT FILM REMOVED BY ACID BATH

Such results are illustrated in the accompanying half-tone. It shows a paint film of silica-graphite and steel car paint that was originally applied to a sheet of boiler plate. One-half of each of two plates was painted with three coats of the two paints, respectively, and the whole submerged for two months in a bath consisting of the strong sulphuric acid solution of the residue of a storage battery. The acid attacking the metal worked beneath the paint films and succeeded, in the time given, in entirely removing the film of steel car paint and one-half of that of the silica-graphite paint, the other half of the latter remaining closely adherent to the metal.

An interesting feature of this test is that after a lapse of nine months, during which time these films have been subjected to every change of the atmosphere, they remain as soft and flexible as a piece of chamois skin. That the failure of the acid to cause any perceptible deterioration of the film is evidenced by the fact that, when viewed under a microscope, the whole surface is seen to be covered with the fine particles of silica and graphite. It is therefore, undoubtedly, due to the highly resistant and inert qualities of these pigments that the film was so thoroughly protected and shown to be about as nearly absolutely acid-proof as it is possible to make a paint.—*From Railway Age Gazette.*

LUBRICATION IN THE REFRIGERATING PLANT

Dixon's Ticonderoga Flake Graphite Demonstrates its Value as a Lubricant for Ice Making Machinery

An authority has stated that when oil is used in the steam end of an ammonia compressor, that there is a loss of about twenty per cent. of condensed steam through the skimmer and oil traps, but adds that there is absolutely no reason for wasting a single pound of steam.

On a compressor under the supervision of the above mentioned expert, which has been in operation for over three years, nothing but the Dixon Ticonderoga Pure Flake Lubricating Graphite No. 1 has been used as a lubricant for the steam valves and cylinders. The service is particularly hard, in that this plant is used only for experimental purposes, being run intermittently and is handled by many people in the course of a year; recently the valves and cylinders were opened up for examination and we were not surprised to find a beautiful sleek graphite coating upon the metal surfaces which we have so often described in our literature. There were absolutely no signs of any scratching or pitting whatsoever. The graphite was delivered through an ordinary graphite lubricator, which can be purchased at any large mill supply house.

We think that the above way well be carefully considered by those who are responsible for the efficient operation of ice making machinery.

LONGINGS

When days grow long and summer heat
Like a furnace glows on roof and street,
When the leaves of the city's trees are dry
And shrivelled beneath the burning sky,
Nodding and dosing there comes to my brain
The musical words of an old refrain
That lives in my ears the livelong day,
It is, "Over the hills and far away."

Where mighty trees cool shadows throw
On mossy banks and ferns below,
When the quail pipes in the early morn,
As he leads his flock through rustling corn,
Where the fishes leap in the river's tide
And under the roots of the willow hide,
And freighted with fragrance, soft winds play,
"Over the hills and far away."

The hum of the bee, that uneasy rover,
As he gathers sweets from the purple clover,
The robin's song at the close of day
As twilight drops her curtain gray
To draw a long new breath of life,
Far from the noise and strife,
And to hope that I may go some day
"Over the hills and far away."—L. M. STOCKING.

FROM A BANK IN NEW YORK STATE

"Will you kindly quote price on Dixon's Gem Eraser No. 1145 (per dozen).

"You sent us a sample sometime ago and we liked it so well that we can use no other."

ABOUT THE PRICE OF LINSEED OIL

Nearly every dealer in paints and varnishes is wondering about the increase in cost of pure linseed oil, and not a few of these dealers are prone to accuse certain individuals or groups of individuals of influencing the price of this raw material. Some have an idea that the increase is due to unfair conditions, but in order to straighten out this viewpoint we believe it best to give a few facts which have been gathered from authentic sources and which prove conclusively that the increase in cost has been the result of conditions beyond the control of any single group of individuals, and is therefore just.

Before the new crop of flaxseed was received, linseed oil was very scarce throughout the country and all mills were closed down because no seed could be obtained, and the crushers had to wait for the new crop. In the early fall of 1909, prospects seemed bright for one of the heaviest crops of flaxseed ever produced and many consumers looked for low prices when the new oil would appear on the market. But in making their calculations, they did not take into consideration the scarcity of old oil, and only looked at the American crop situation.

Even the American estimates proved incorrect, as many people estimated a crop of 28,000,000 to 32,000,000 bushels, and some even predicted 35,000,000 bushels. But when the threshing was started it was found that the plant was not as well filled as was expected, and it is now generally conceded that the crop did not exceed 19,000,000 bushels. The approximate average consumption of flaxseed in the United States for the past five years has been 25,000,000 bushels. The average American flaxseed crop is about 25,000,000 bushels, but for the past two years it has not averaged 20,000,000 bushels, forcing the crushers to look to the Argentine Republic for assistance. Inasmuch as Europe can easily consume all that the Argentine raises, and take some from us besides, it is quickly apparent that this country buying seed from the Argentine would raise prices.

This year, when the crushers began to realize the crop conditions, they jumped into the market and purchased every available bushel of seed as it came to the market. This, of course, resulted in the price advancing rapidly, until today cash seed is hovering around \$2.20 per bushel. It is ridiculous to suppose that the farmers are holding back seed, because it would be hard indeed to find a farmer who would not be glad to sell his product at about double the price he usually gets for it.

Sometime ago the American crushers purchased about 4,000,000 bushels of flaxseed from the Argentine Republic, but about that time the Argentine crop was injured by frost and English buyers jumped into the market, with the result that at the present time Northwestern seed can be delivered from Duluth to New York City about as cheaply as seed from Argentine. This leaves a visible supply of 24,000,000 bushels in this country, while as stated above, our consumption averages 25,000,000 bushels.

Another point to be considered in regard to supply and demand is that there will be an abnormal consumption of linseed oil this year as a result of the general prosperity that now exists throughout the country. The unfavorable con-

ditions that existed two years ago, resulted in buyers being very conservative and purchasing in very small quantities, and in many painting and varnishing operations being postponed. The prosperity of this year has given buyers confidence, and also brings with it orders for hundreds of thousands of railway freight cars and numerous large building operations. Many property owners who postponed the repainting of their houses as a result of the hard times are now loosening up, and we anticipate that painters throughout the country will throughout the year have as much work as they can possibly handle. All this means a great consumption of linseed oil.

—From *Sherwin-Williams Booklet*.

TIME MADE PER HOUR

Motor car	131.75	miles per hour.
Electric trolley	128.55	"
Steam locomotive	120.00	"
Pigeon	85.60	"
Motor cycle	84.50	"
Bicycle	63.00	"
Aeroplane	49.99	"
Motor boat	37.93	"
Running horse	32.43	"
Steamship	30.53	"
Trotting horse	30.37	"
Skater	27.19	"
Running man	14.20	"
Rowing	12.77	"
Pedestrian	9.11	"
Swimmer	2.65	"

—*Motor Age*.

DIXON'S GRAPHITE ON THE LINOTYPE

EAST LAS VEGAS, N. M., April 3, 1910.

Joseph Dixon Crucible Company,

Jersey City, N. J.

GENTLEMEN:—I wish to say a word about your graphite. I am using it in connection with the operation of the linotype battery in the office of the *Daily Optic* and find it unexcelled for the needs applied to. After using it, to get along without it would be practically impossible.

Thanking you for past favors, I beg to remain,

Yours respectfully,

(Signed) H. H. LUSK.

A LINER'S COMPLEMENT OF MEN

To give an idea of the number of men employed on a steamship like the *Mauretania*, a New York paper prints the following:

The entire complement of officers and men on the *Mauretania* numbers approximately 900. In the navigating department there are 70 officers and men, in the engineering department are 390, in the steward's department are 350, and this does not include the 50 employed in the kitchen, or ship's galley, to speak in true deep-sea vernacular.

There are about two score other persons employed on the ship in the way of telegraph and telephone operators, elevator attendants and printers.



LANGHAM APARTMENTS, NEW YORK CITY

The above cut shows the Langham Apartments, located in the fashionable district between 73rd and 74th Streets, Central Park West, New York.

This structure is in every way a modern representative apartment house. The architects were Clinton & Russell, John Downey was the general contractor, and the J. B. & J. M. Cornell Company were the steel contractors.

The steel work of this structure is protected with two coats of Dixon's Silica-Graphite Paint, Dark Red and Olive Green.

THE DIXON MISSIONARY

The manager of Dixon's Southern Branch Office not long ago dropped in to see a customer and told him that he was going to send one of the men down to work up the district. Whereupon the customer casually remarked: "So, you are going to send down a missionary." A little later the "missionary," in the person of one of the Dixon salesmen, appeared on the scene as promised. The customer has a darky assistant who seemed to take considerable interest in the "missionary" and regarded him curiously each time he dropped into the store. Finally he went up to our representative and asked for an explanation of the "missionary" work. He said he had heard that a "missionary" of the Joseph Dixon Crucible Company was coming and he thought "crucible" must have something to do with crucifixion, and so supposed that he and his darky friends would be in for some revival meetings.

This reminds us of the old standard Salvation Army joke

of the young man who, as he passed Salvation Army Quarters, was approached and asked if he did not want to be saved. He inquired if they saved men and the reply was "Yes." Then he asked if they saved girls. The answer was still "Yes." Whereupon he requested that they save him a couple and he would be around for them about eight o'clock.

All of this goes to prove that there are various kinds of saving work, and that among other things is what many of Dixon's products do—save work. The graphite lubricants save work for the engineer by decreasing friction troubles and smoothing things out generally. Dixon's Silica-Graphite Paint saves work in frequent repainting, and so on down the line. To save in work always means to save in cost, each may be expressed in terms of the other.

We have a number of "missionary tracts," giving information about these products. We should be glad to send any of these to you if you are interested. Merely tell us what class of work you do, or what products you desire to learn more about, and we will forward the proper matter.

MORE ABOUT FOREIGN TRADE

Consul-General Frank Dillingham of Coburg, in a report on foreign trade competition, quotes an English writer who ascribes the success of German exporters to their commercial agents, who are usually expert linguists, and to their advertising matter, which is printed in the language of the people whose trade they seek.

These are two factors to which attention has frequently been directed by American consular representatives, and which, because of their neglect by American exporters, cannot be too strongly emphasized.

By such methods Germany has taken export trade from the United States as well as from England.

Statements similar to the above have been repeated by authorities on the subject time and time again; GRAPHITE has published quite a number of them, and yet the American consuls report that manufacturers of the United States continue sending out pamphlets, catalogs and circulars printed in English, and that such printed matter is practically worthless.

If American exporters expect to get a strong foothold in Germany, France, Spain and other foreign countries other than English speaking colonies, better attention must be shown to the acquirement of languages.

\$825 A SQUARE FOOT PAID FOR N. Y. REALTY

A new high record price for real estate in New York City was established some days ago by the sale of a nineteen story building at the corner of Nassau and Wall Streets, New York City, which was sold to the Manhattan Trust Company, and it is generally understood that the price paid was \$1,500,000. The plot on which the building stands contains 1825 square feet, thus the price was approximately \$825 a square foot.

The nineteen story building erected only twelve years ago is now to be torn down to give place to a thirty-two story structure.

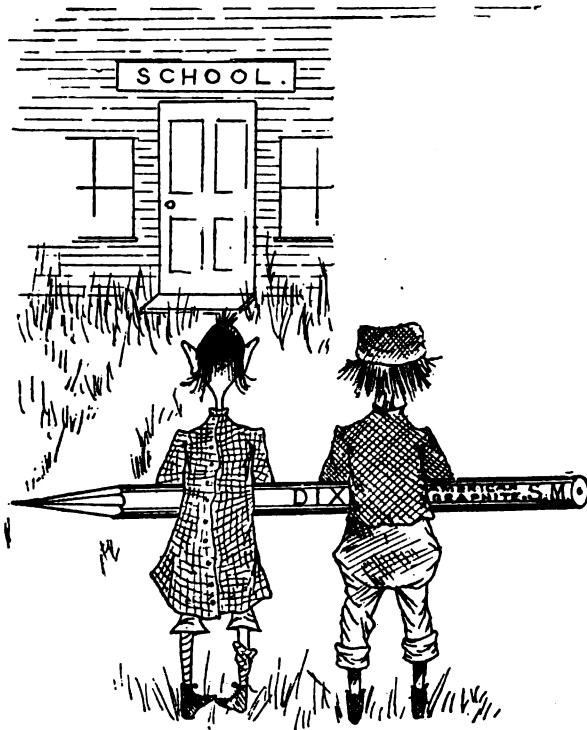
In making the deal the purchasers did not consider the nineteen story building, but rather only the value of the real estate.

DIXON'S SCHOOL DEPARTMENT

There are probably many readers of GRAPHITE who are not aware that the Dixon Company maintains a School Department, that is, a department devoted exclusively to the selling of lead pencils, crayons and erasers to the public and private schools of this country. We have branch houses in different parts of the United States, and in all, eight people, who are particularly interested in this part of the Dixon Company's business.

The school people of this country have two large meetings which are held annually, one in February for the superintendents, and the other in July for the teachers. The annual meeting this summer was held in Boston, and there were present, representing the Dixon Company, Mr. C. M. Harding from the New York State and Ohio territory, Mr. Horace Johnson from the Chicago Office, Mr. John J. Leckie from the Philadelphia Office and Mr. G. H. Reed, from the Home Office.

The meetings that particularly interested the Dixon people were those devoted to the Department of Manual Training and to Art and Drawing. There were four of these meetings



and at all of them the Dixon representatives were in evidence to meet their friends and to offer samples of the goods that were most popular and most liked by the teachers attending these meetings.

Dixon's Manual Training Pencil met with great favor from all. This pencil is made specially for manual training work, and samples were put up in neat little boxes so they could be taken home as souvenirs of the convention.

Industrial Education or Manual Training, as it was originally called, has come rapidly to the front in the last few years, and the necessity of giving the child the ability and power to work with its hands as well as its head has become a prominent factor in the education of the young. It was Ruskin

who once said: "He who works with his hands only, is a mechanic; he who works with his hands and head is an artisan; he who works with his hands, head and heart is an artist."

James Y. Joyner, state superintendent of North Carolina and President of the association, gave one of the strongest talks of the whole meeting on the value of Industrial Education. Among many other valuable thoughts, he said: "Every man needs and should be provided two sorts of education—one to fit him to work, the other to fit him to live."

Governor Kitchin of North Carolina spoke very forcibly, and among other things said: "A country whose government rests upon the will of the people in order to have a certain just government, whose burdens are levied and whose blessings are distributed impartially, must have a high-class citizenship, so intelligent that it cannot be deceived, so conscientious that it cannot be corrupted, so courageous that it cannot be intimidated. The training of this citizenship largely depends upon the teachers of America."

Superintendent J. G. Edgerly of Fitchburg, said in the course of his talk: "The schools of today must look forward to the constructive industries as well as towards the professions, and must prepare for industrial efficiency as well as for general culture."

Mr. Arthur D. Dean, the head of the Industrial Training Department for the State of New York, said: "Employers must regulate their affairs so that the boys and girls between fourteen and sixteen years of age may be excused from factory and store work to attend these schools for a few hours a week in order that American citizenship may be preserved, and some notion be given these immature children of industrial and commercial practise. At present there is but little connection between school, shop and store."

Mr. Edward A. Rumely of the M. Rumely Company, Laporte, Ind., also spoke very finely indeed of the necessity of educating the muscles when you educate the mind, and among other things he said: "The training of the muscles is an economic necessity in a day when we have come to depend upon foreign nations for supply of skilled mechanics. We must educate our boys to trades—the highest possible alertness and skill in the use of their hands are the great material needs of the nation."

All the speakers seemed to unite on the necessity of education of the child's hands as well as the child's head, so that he may become a useful as well as an intelligent citizen.

The meetings were honored by the President of the United States, who spoke to an audience of about ten thousand people in the Stadium of Harvard University.

In the Department of Art and Drawing, suitable and appropriate samples of pencils were given to everyone attending these meetings. Many teachers visited the Boston Office of the Dixon Company, and were there gladly received.

For the first time in the history of the association, over seventy-five years, a woman was elected president for the ensuing year, Mrs. Ella Flagg Young, Superintendent of Schools, at Chicago, Ill.

The *New York Evening Post* reports the talk given by H. G. Healey of the New York School of Commerce, on the subject "What Business Men Demand of our Graduates." Mr. Healey went on to say that judging from replies to some four hundred letters sent out by him, the business man's requirements were

for more character rather than for more technique. There is no complaint, for instance, on the student's ability to write shorthand fast enough or to post a ledger, but his deficiencies are mostly observed in the personal equation. The faults chiefly mentioned are irresponsibility, laziness and a clock-watching attitude.

Mr. Healey recommends that the teachers devote more attention to training the character of the student along such lines as will most benefit him when he enters the actual business field. The suggestion is made that the business houses and schools co-operate to the end that the student be permitted to secure some practical experience while still attending school. This can be brought about by having those scholars sufficiently advanced spend a certain number of hours during the week at a business office. Thus theory and practise could be, to an extent, combined, a certain experience would be provided to the student, and an appreciation of the business conditions given him.

The meeting next July will in all probability be held in San Francisco.

AMERICAN EXTRAVAGANCE

Roger W. Babson, lecturer on economics at Harvard, the University of Pennsylvania, the Massachusetts Institute of Technology and the London University, is reported in an interesting way in the *New York Times*.

Professor Babson is a statistician of prominence, is cautious and has studied every financial movement in the United States since the word finance has invaded the dictionary.

In addition to his position as lecturer, he is officer in a prosperous bank and has supplied merchants and bankers with information on the exact state of the business in which they were interested.

In the interview mentioned, he makes the statement that the people are spending too much money. Not only individuals, but firms, corporations, cities, states and the nation as well.

Our habit of mind has got to be that we must have what our neighbor has. We accept this as a reason for spending money. Next door they have an automobile; it is convenient and pleasant, so we must have one also.

A woman will buy a fur jacket because her friend has one. Men earning \$2,500 and \$3,500 a year, and their wives buy luxuries quite openly for no other reason than that people two or three times as well off have them.

While automobiles are only one item of our national extravagance, they are a very marked and important factor in the present decline in values. It was expected that about \$700,000,000 this year would be spent in automobiles, including the money put into the plants and the money spent for the machines. This is more than the average total transactions in bonds for an entire year on the New York Stock Exchange; and this is only one item.

We must learn to put money by, must learn to invest it, if we want to have any lasting prosperity.

The professor mentions one little instance in his own life; that of the little town in which he was born. When he was a boy everybody cut his own grass. There were lawn mowers and that sort of thing, but the idea of hiring a man to mow your grass never entered into anybody's head. Now there

are nearly two hundred men in the town who do nothing but take care of lawns. There is a tidy sum spent by a community which is not rich.

Then again, when the professor was a boy the men polished their own shoes, and now there is a store on the main street which employs five Italians to black boots. Clerks on their way to business stop in and have their shoes shined there. With the wages of the five men and the rent they have to pay and the little profit, it must take twenty dollars a day to keep that store going. There you are, six thousand dollars a year that might be in a savings bank spent on polishing shoes, and the professor is quite certain that the men who patronize the shoe parlor are not getting more wages than men got some years ago when they polished their own shoes.

The mania for luxuries has grown by leaps and bounds. In the eighties, which was a period of prosperity, twelve per cent. of the people were engaged in the manufacture of luxuries. Then, after the troubles of 1893, the number fell to five per cent. In 1905 twenty per cent. of our workers were engaged in producing luxuries.

The professor wishes that this country could take a lesson from France. That country follows its natural growth, and thrift is respected more than wealth.

A CONFERENCE OF EXPERTS

By WALLACE IRWIN

Three sailors sat by Mona's pier,
Each strange of dress and rather queer.
Said Number One: "What brung us here
By Mona?"
Said Number Two: "Me little tale
Is known to all the men who sail.
I came here, steerage, in a whale—
I'm Jonah."

Said Number One to Number Two:
"Me job's collecting for a zoo;
The gnat, the elephant, the gnu,
The boa,
The ape, the adder, and the skunk,
All shared me meals and shared me bunk.
I swam ashore when I was drunk—
I'm Noah."

Said Number Three: "You see in me
A liar of the first degree.
Me gallant ship, the Jennie G.,
Got in bad.
Last night, when I was on the mast,
A hurricane blew in so fast
It dropped me here where I stuck fast—
I'm Sinbad."

—*Smith's Magazine*.

MR. CHAS. E. DURYEA, the well known expert on internal combustion engines, says: "By using graphite for lubricant and alcohol for fuel, it is possible to make an engine that need not be cooled worth mentioning; such an engine radiates the wall heat into the new charge and this heat is not lost."

THE NEW JERSEY CORPORATION LAW

The *Long-Islander*, published at Huntington, Long Island, N. Y., in its issue of June 17, entertained its readers with an editorial on "Federal Supervision," and in this editorial took occasion to say:

"The loose corporation laws of such states as New Jersey, Delaware and West Virginia, have inflicted enormous losses upon the whole country."

We have asked Mr. William H. Corbin, vice president and counsel of the Joseph Dixon Crucible Company, for an expression of his opinion on this quotation from the *Long Islander*.

The name of Mr. William H. Corbin is known to every professional and business man in the State of New Jersey, and he is very generally known throughout the United States as an authority on corporation law. Mr. Corbin says:

"Statements similar to this have often been published; they grow out of ignorance and misunderstanding of the truth.

"The corporation laws of New Jersey are not loose; quite the contrary. No state has more rigidly held to the rule that stockholders must pay 'money or money's worth' for every share of stock, so that the debts of the company may be fully paid.

"The great rush of corporate capital to New Jersey in the years between 1885 and 1905 was due, I think, first, to the simplicity and clearness of the New Jersey Corporation Law, which was framed on the pattern of and largely copied from the revision of the New York Corporation Law, made some sixty years ago; second, to the justness and fairness of the New Jersey Courts in dealing with corporate questions, and the maintenance of chartered rights; and third, to the stability of our laws, there being shown little disposition on the part of the legislature to make radical changes.

"Indeed, the only fundamental change made in this line is the one which many other states made first, and in which New Jersey and New York and others followed; that is, the provision passed by New Jersey in 1888, allowing one corporation to hold the stock of another; in other words, authorizing holding companies; New York passed a similar law in 1892; it is practically the law everywhere at this time. This wrought a profound change in the American Corporation Law. The provision is very broad in its terms, but our courts are limiting its operation, holding that all that it means is that one corporation may hold the stock of another corporation, when, by its chartered powers it has the right to make use of such powers and rights as that other corporation possesses. Thus, it has been held that a railroad company cannot hold the shares of a connecting trolley railroad company, railroad companies being one class and trolley companies another.

"Many may not be aware that New York and Massachusetts, the most conservative of states, have, within the last few years, revised their corporation laws so as to actually copy many of the New Jersey provisions, and in substance, to copy the rest. The tendency has been towards uniformity of legislation in the various larger states, practically on the basis of the New Jersey law.

"It may be that West Virginia and some other states have been passing some loose and unworthy laws, for the purpose of inducing corporation business to come to their several states, but that cannot be truthfully said of New Jersey."

COMETS AND METEORIC GRAPHITE

We were informed by all the sky sharps of a most brilliant sight that was to appear in the heavens in the way of a comet. The men to whom we look for instruction in matters astronomical, promised us lots of things and even managed to frighten us not a little. Well, what of it? We all know the end—which has been that of the comet and not of ourselves.

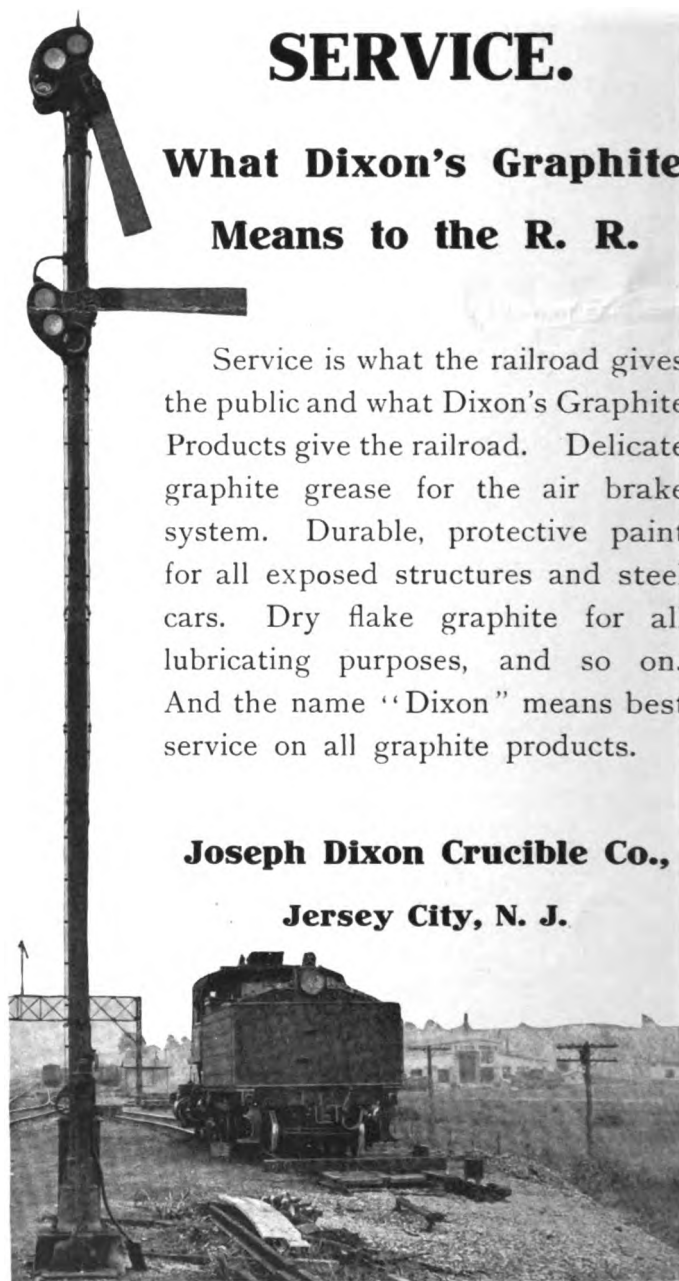
So it is we often hear of an "artificial" or an "amorphous" graphite that is rapidly approaching the fields of industry from which Dixon's Ticonderoga Flake Graphite is to be knocked into a cocked hat. "Authorities" are cited from all over creation but they lack the voice and the experience of the hundreds of thousands of practical engineers, mechanics and others throughout the world. The result is that though we have much to read and lots of talk, the end is mighty little comet and a good deal obscurity.

SERVICE.

What Dixon's Graphite Means to the R. R.

Service is what the railroad gives the public and what Dixon's Graphite Products give the railroad. Delicate graphite grease for the air brake system. Durable, protective paint for all exposed structures and steel cars. Dry flake graphite for all lubricating purposes, and so on. And the name "Dixon" means best service on all graphite products.

**Joseph Dixon Crucible Co.,
Jersey City, N. J.**



CAUSE OF FAILURE OF CRUCIBLES

STORAGE: Crucibles should be stored in a place where it is at the same time *warm* and *dry*. It is possible that a place may be warm and very damp at the same time, and a crucible taken from such a place and allowed to cool, will immediately condense moisture within its pores.

DRYING: A crucible should go into the fire at a temperature not below 212° Fahr. because if cooled below this temperature from a higher temperature, it may condense moisture.

ANNEALING: This has commonly been associated with the drying of crucibles, but the two operations may be considered as entirely different. The annealing of a crucible may properly be considered as the slow heating from a temperature of 212° Fahr. up to that point where it would show a low, red heat. The effect of annealing is the same in crucibles as in metals, that is, relieving interior strains. Some anneal before the crucible has been placed in the fire at all, and others do it by subjecting the crucible *very slowly* to an increase of temperature on its first heat. Every crucible user settles this practise in his own way, and we can only suggest in general, that the heating be done gradually and especially *uniformly* over the entire surface of the crucible. Many crucibles are ruined in annealing by allowing the heat to strike more intensely on one part of the crucible than another.

FURNACE BOTTOMS: See that the crucible has a good bottom to rest on in the furnace. In some foundries a brick is used for the crucible to set on after it settles down. Such bricks should be smooth and level; if they get on edge or cornerwise, the hot crucible full of heavy metal settles down on them or a hard piece of clinker, and a hole is punched through the crucible.

FLUX: Where it is necessary to use a flux to clean the metal it must be expected that the life of the crucible will be shortened, as nearly all fluxes attack the binding materials in the crucible to a greater or less extent. It is very bad practise to allow the flux to be melted in the bottom of the crucible. It should be added after a small amount of the metal is melted, to prevent contact of the molten flux with the bottom of the crucible.

WEDGING: Be very careful not to allow ingots to wedge in charging the crucible. Place them in loosely, so that expansion will not break the pot. Never put any considerable amount of metal in a very fine state of division in the bottom of the crucible, for this may also rupture the crucible because of expansion.

TONGS: The tongs should grip the crucible below the bilge and lift it without undue pressure, as if it were in a basket. The curvature of the tongs should be very close to that of the crucible at the point where they grip it, and the tongs should frequently be shaped, to maintain this condition. When a crucible is at white heat, it is soft and flexible, and many crucibles are ruined by forcing the tongs together excessively.

FUEL: Fuel needs close attention. Solid fuel should be dry, as free as possible from sulphur, and low in clinker-forming ash. The ash from some coal is extremely fusible and when in contact with the surface of the crucible, may flux it excessively and so reduce the life of the crucible.

Coke should be of the very best quality, because making a more open fire, excess of oxygen is liable to pass through,

thus consuming the carbon in the crucible too rapidly. Good coke tends to minimize this difficulty.

Oil should be free from moisture, as its presence increases the difficulty of securing a perfect combustion. Imperfect combustion means a lowering of the temperature with consequent loss of the graphite in the crucible wall. The proper use of oil fuel requires some little care and study in order to get the best results. The reason for this is that it is so easy to bring about rapid changes of temperature due to very slight difference in supply of oil and air. Especial care should be taken with the crucibles in oil furnaces on the first heat.

BUTTONS: Do not allow any metal to cool in the crucible, but pour until the melting pot is entirely empty. These "buttons," as they are called in shop parlance, will have small threads of metal which will attach themselves to the crucible, and tear the walls if forced out; or if left in the crucible, when the next heat is taken off, they expand more rapidly than the walls and break the pot.

SERVICE OF CRUCIBLES: The melter must not expect as many heats in reducing one metal as another. From three heats in melting nickel to five or six in melting steel; about twenty-five are reached in melting copper, while the heats run into the forties in melting composition. The proper measure of service of a crucible is the total number of hours in the furnace under the same conditions. If the crucible can be recharged and put back into the fire at once, a greater number of heats will result than if it is set away and allowed to cool between each heat.

Write our Crucible Dept. for book "Crucibles, Their Care and Use."

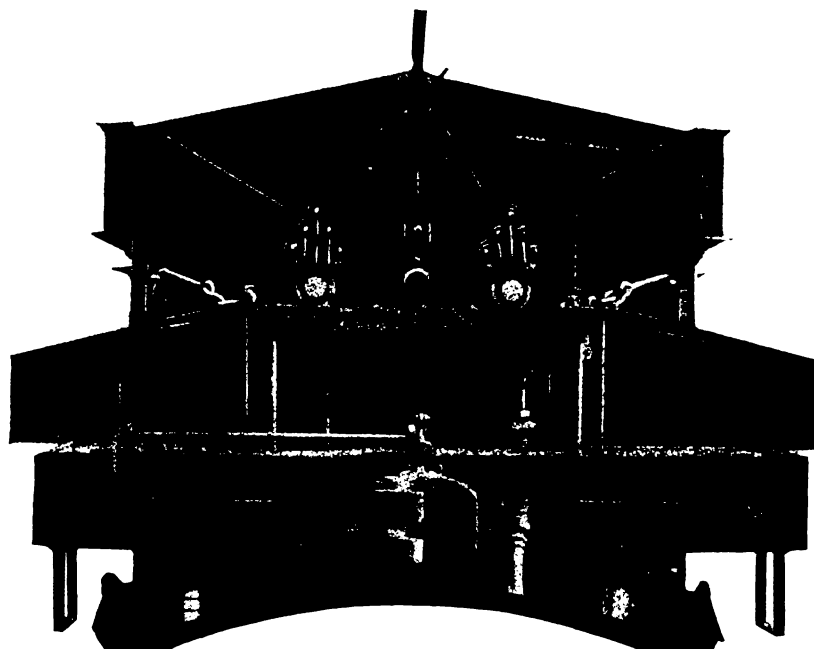
A LESSON OF VALUE

That he might become intimately associated with the serving of guests and that he might learn the best methods of pleasing his guests, the senior member of the firm of Christen Brothers, hotel proprietors and caterers of Genoa, Italy, served six months as a waiter in the grillroom of the Hotel Plaza, New York.

He did not reveal his identity until just before sailing; he then said that he has taken the place of a waiter and worked hard that he might better understand the needs of the many American tourists who visit Genoa and who are so often his guests. He has been enabled to learn something about the inside work of the kitchen and he has also been able to absorb a great many ideas that will be of value to him and believes he will be greatly benefited by his experience.

A member of a well-known firm of manufacturers in Boston lately said, that they have derived much valuable information by sending a man to South America in order to learn the ideas of the buyers there, to know what they want and how they wanted it, and how goods should be packed and shipped in the most satisfactory manner. He has learned that the ideas of many manufacturers in the United States were not acceptable to people of foreign countries, and if manufacturers expect to do business in foreign countries, they must send goods that suit both in quality and packing.

In other words, they must do as this hotel proprietor of Genoa did, get thoroughly posted through some responsible representative, even though they are not able to get it personally.



What Paint for the Steel Car?

A cheap paint costs just as much to apply and requires two or three applications to equal the length of service given by a good paint. And the car deteriorates in direct proportion to the *lack* of protection resulting from the use of the cheap paint.

Dixon's Silica- Graphite Steel Car Paint

will provide a real and lasting protection which means that it prevents premature scraping of the car. In its inert pigment and pure linseed oil vehicle rests the ability of Dixon's Steel Car Paint to supply an unusual protective service. Dixon's spreads easily, covers well, dries quickly and *stays with the car*. New booklet free on request.

Joseph Dixon Crucible Company,
Jersey City, N. J.

GRAPHITE

VOL. XII.

OCTOBER, 1910.

No. 10.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

READERS OF "GRAPHITE," ATTENTION!

We have been publishing GRAPHITE for twelve years. It has grown from hardly more than a circular of four pages to a defined publication of twelve pages. It is not our purpose here to render ourselves a little applause, however, but we wish our readers to understand that it has now become with us a proposition of considerable magnitude. It costs us, for instance, about thirty-five cents per "subscriber" per year. While we are only too glad to send GRAPHITE to all those who desire it, it has reached a point of circulation where we can hardly afford to include any on our list who really do not desire to have it.

In view of the expense, time and effort we put on GRAPHITE, we feel that all those sufficiently interested in our publication who desire to continue to receive it, should make request to that effect. We shall, therefore, with the November issue of GRAPHITE, include post cards which should be stamped, filled in and mailed in the event that you desire to continue to receive GRAPHITE for the year 1911. The use of the card is not imperative, any means you may take of advising us that you wish to have GRAPHITE for 1911 will be acceptable; but in the absence of such advisement in some form, we will conclude that you do not care to have us continue to send GRAPHITE to you.

We do not wish to be misunderstood in this matter. Ours is merely an effort to see that everybody that wants GRAPHITE gets it, but we shall cease to annoy those who may feel indifferent about it. In view of what we spend on GRAPHITE to make it of value to our readers, we feel that our subscription price, a mere request, is at least a reasonable one.

THE MOST VALUABLE ASSET

To every dealer, no matter what he deals in, or whether he is a retail dealer or a jobber, we can say that the most valuable asset that he can have, is a reputation for handling only reliable goods—products that are well known and above reproach. This reputation is even better than that of good credit, for a man who handles only reliable goods will always have a good business and the credit will follow.

On products that are well known it is easy to maintain prices and profits. An established trade of discriminating and appreciative customers (buyers of values) is worth infinitely more than the uncertain bargain hunters (askers of prices).

Goods that bear the Tiffany brand, no matter where they are sold, carry with them all of the guarantee that the buyer needs. He can't tell why, but he feels a little bit more certain of what he is buying than if he were buying goods of his own brother with his brother's guarantee. If you are making a wedding present you like to give something with the Tiffany brand. If you are carrying a box of candy to your best girl, you are bound to take her a box of Huyler's, even though you wouldn't buy it for yourself.

It is the same with the Dixon Products. Dixon's Pencils are for those who want real value and know it. If you are a stationer you can sell the most critical customer Dixon's pencils and know that satisfaction will result. Old fashioned, substantial worth is inbuilt in Dixon's Pencils—they "make good" in any service.

The same argument follows for all of the various graphite products of the Dixon Company.

UNLUCKY No. 13—SO CALLED

The Franklin Manufacturing Company, Syracuse, N. Y., manufacturers of the Franklin Automobile, are evidently successfully demonstrating that the No. 13 is no more to be feared than an air-cooled Franklin Automobile. In fact, there is good luck coming to the man who starts out on the 13th or with a Franklin Automobile.

Lately a representative of the Franklin Company made a "trek" through 13 states, visiting the Franklin agencies. The Franklin Car made an average daily mileage of more than 250 miles. It covered altogether 3,500 miles. It left Syracuse on the 13th and arrived at Syracuse, N. Y., at the close of its run on the thirteenth day.

The No. 13 has played an important part in the life of the Franklin. During the first year of manufacture the total number of cars turned out was 13. Each time a car has been consigned the No. 13 in a contest, it has finished either first or second. Such faith have the agents of the Franklin Car in this number, that they invariably request its consignment at the opening of a contest.

TO BE SURE

Many men hitch their wagons to stars, while others are satisfied with members of the chorus.—Lippincott's.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

OFFICERS:

President—GEORGE T. SMITH
Vice Pres. & Counsel—WILLIAM H. CORBIN
Treasurer—GEORGE E. LONG
Secretary—HARRY DAILEY
Ass't Treas. & Ass't Secy—J. H. SCHERMERHORN

DIRECTORS:

GEORGE T. SMITH	WILLIAM H. CORBIN
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WILLIAM G. BUMSTED	

OFFICES AND SALESROOMS:

NEW YORK SALESROOM, 68 Reade Street.
 PHILADELPHIA SALESROOM, 1020 Arch Street.
 SAN FRANCISCO SALESROOM, 145 Second Street.
 CHICAGO OFFICE, 1324 Monadnock Block.
 BOSTON OFFICE, 648 John Hancock Building.
 PITTSBURG OFFICE, Wabash Terminal Building.
 ST. LOUIS OFFICE, 501 Victoria Building.
 WASHINGTON, D. C., OFFICE, 1410 H Street, N. W.
 BALTIMORE OFFICE, 1005 Union Trust Building.
 BUFFALO OFFICE, 72 Erie County Savings Bank Building.
 ATLANTA OFFICE, Fourth National Bank Building.
 EUROPEAN AGENTS,
 Graphite Products, Ltd., 218-220 Queen's Road, Battersea, London.

MISINFORMATION ABOUT GRAPHITE

As Shown by Some of Our Would-be Competitors

The amount of misinformation abroad concerning graphite is amazing. One "manufacturer" of "graphite products" says in his "Introductory:"

"Although graphite, also called plumbago and black lead, is perhaps applied to a greater diversity of uses than any other mineral, we probably know it best in the form of common, ordinary, everyday "lead" pencils, where we will all agree, it is the whole thing, for a lead pencil is good or bad as the graphite of which it is made is uniformly pure or otherwise."

As every lead pencil manufacturer well knows, the goodness or badness of a lead pencil is not "as the graphite of which it is made is uniformly pure or otherwise."

The Fabers, who have been making lead pencils since 1761, might be furnished with an absolutely pure graphite and yet fail utterly to turn out a decent lead pencil.

A young man wagered a box of candy that a girl could not make an omelette even with newly laid eggs and all the other ingredients furnished her. She accepted and lost, for the eggs, while newly laid, were boiled. In other words, physical characteristics make a wonderful difference. It is not alone the purity of graphite that makes it suitable for this, that or the other purpose, any more than it is the purity of sand for building purposes. An amorphous graphite is the one chosen for lead pencils, as the "lead" in a pencil requires a clay body to give it hardness and to act as a binder. For the manufacture of crucibles, a "sharp" foliated or crystalline graphite is required in building up the walls of a crucible, the same as a "sharp" sand is required in making the proper mortar for the walls of a house.

For lubricating purposes it will be found that all forms of graphite have lubricating qualities, even soapstone and mica are sometimes used, but for permanent and satisfactory results there is no graphite that equals Dixon's Ticonderoga Flake Graphite. That has been demonstrated in the experience of thousands of practical men throughout the world.

People should consider graphite as they consider wood, and select graphite for the purpose intended as they would select the proper wood for building purposes.

The Dixon Company are owners of the famous Ticonderoga flake graphite mines, and are large buyers and manufacturers of Mexican, Ceylon, German, Korean, Italian and other foreign graphites, as well as of various American and Canadian mines.

For this reason and because of the vast experience and most careful study, the Dixon Company are thoroughly prepared and thoroughly equipped to manufacture graphite for whatever purpose intended and to make use of the very best graphite for each particular product.

ON THEIR "BRIDAL TOUR"

Manager Vanderslice of the Dixon Branch, St. Louis, writes that he is "jumping back to St. Louis to meet the boys on their bridal tour."

He refers to Assistant Treasurer and Secretary Julian Schermerhorn and our Mr. Van Dien, chief of the pencil department, who, hand in hand, are visiting the branches of the Dixon Company.

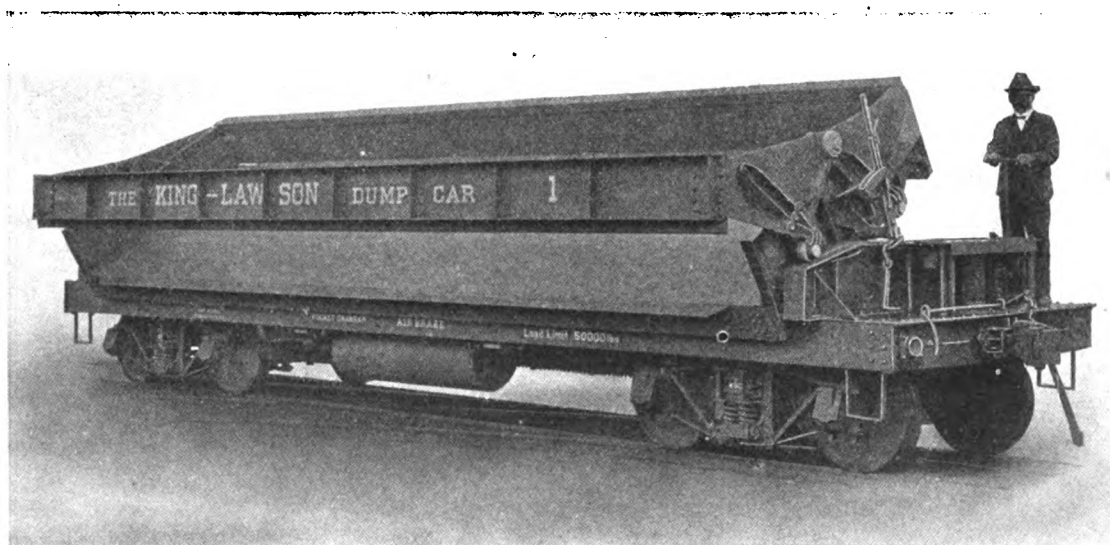
ANOTHER NEW ONE

The Chicago branch of the Dixon Company received a communication addressed as follows:

"JOS. DIXON & CRUSIRAL COMPANY."

This is certainly a new one, and it would be interesting if we could make a list of all the different ways we have been addressed, but so long as orders are received, we are not so particular as to what they may call us.

FRICTION losses are always collecting their toll. Is this kept to the lowest possible limit? Better read "Graphite as a Lubricant," eleventh edition, and see.



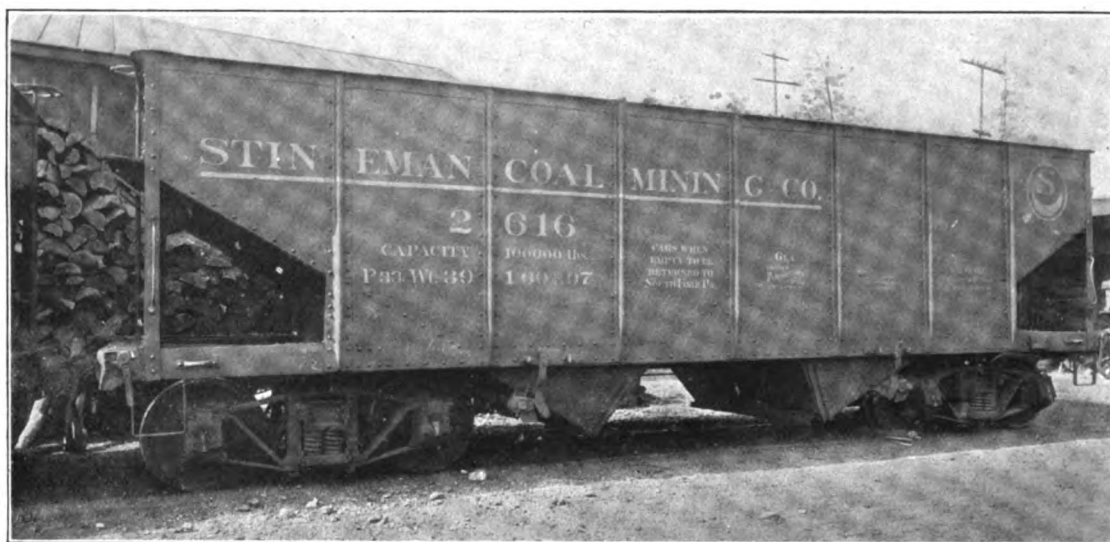
King-Lawson Dump Car protected with Dixon's Steel Car Paint

DIXON'S STEEL CAR PAINT

The best recognized vehicle for paint pigments is boiled linseed oil. Probably nine out of ten protective paints are linseed oil paints. This vehicle is strongly adhesive and dries in a tough, elastic film, *provided* these natural qualities of the oil are not impaired by the pigment used. Linseed oil might be used without the addition of a pigment but for the fact that, alone, it is not wholly impervious to moisture. A pigment also lends "body," assists the paint film in withstanding beating rain and hail storms, and helps protect the oil against the destructive influences that affect it. For Dixon's Silica-Graphite Steel Car Paint we use the very best

spreading capacity. The first tends to a premature wearing away of the pigment, and the second results in spreading out the paint so far as to give too thin a coating. Silica corrects both these tendencies of graphite. It performs for graphite the same service that an alloy does for gold, increasing its wearing powers. It "drags" just enough under the brush to prevent too thin a coat being applied to a surface.

The well known lubricating quality of Dixon's Flake Graphite acts not only as an important factor for overcoming friction in the working mechanism of all steel cars, but also serves as a positive resistant of abrasion, which in turn results in prolonging the life of steel cars and preserving their appearance.



Stineman Coal Mining Company's Car protected with Dixon's Steel Car Paint

grade of pure, double-boiled linseed oil. We mix the oil and pigment in our own factory and thus we can be sure of the right standard of quality and proper proportions.

The base of Dixon's Silica-Graphite Steel Car Paint is a natural mixture of silica and graphite. This pigment is inert, unaffected by heat or cold, unchanged by acids and alkalis—practically indestructible. Silica and graphite make a perfect combination. The two characteristic traits that graphite alone possesses for paint service, are softness and excessive

The secret of the success of Dixon's Silica-Graphite Steel Car Paint, if it may be called a secret, is that none of its resisting power is used up by a conflict of pigment against vehicle. The paint that is weakened by the working of chemically destructive forces within itself naturally cannot so well resist the outside influences that are constantly tending to destroy it. Since Dixon's Silica-Graphite Steel Car Paint can devote all its resisting powers to exterior influences, it is capable of longer resistance—that's the whole story in a nutshell.

As for records and results in actual steel car service, we present in a booklet a number of views of cars that have been in service for varying periods, all of which are protected with Dixon's Silica-Graphite Steel Car Paint. Dixon's meets perfectly the recommendations of the Master Car and Locomotive Painters' Association, spreads easily, dries well, and stays with the car.

Another peculiar and desirable feature of our paint lies in its ability to take perfect stenciling. A number of steel car painters, familiar with stenciling, have pointed out this advantage to us, and those who have had trouble with other paints will especially appreciate this feature of Dixon's.

THE BUILDING OF THE PRUDENTIAL

"The Prudential has the strength of Gibraltar." This phrase has been made famous throughout the country by the advertising of the Prudential Life Insurance Company of Newark, N. J. The above illustration shows the new home of the Prudential Company, which has grown like the oak from the acorn. Two years after it started, in 1877, the assets



of the Prudential were \$7,371. Thirty years later its assets had grown to \$145,416,846. At the end of 1907 the company had 7,000,000 policies in force, representing more than a billion and a third of insurance.

The Prudential, unlike the prophet, is not without honor even in its own country. For instance, it pays to the State over \$600,000 in yearly taxes. It has paid nearly \$25,000,000 to beneficiaries of Prudential policies in New Jersey. Over 1,000,000 policies aggregating \$176,000,000, are held by New Jersey residents. In the city of Newark alone the total of

insurance in force is nearly \$40,000,000. There are between three and four thousand Jersey residents in the service of the Prudential; 2,400 of these are in the home office buildings. Nearly \$8,000,000 has been paid to the field force in the State of New Jersey since its organization, while the sum paid the home office force is approximately double this amount.

As will be seen from the cut, the new Prudential Building is a handsome modern structure. Credit for the building is due to George B. Post Sons, architects; Tysilio Thomas, supervising architect; Post & McCord, steel contractors, and the American Bridge Company, fabricators. 8,000 tons of steel was used in the construction of this building. In order that the "Strength of Gibraltar" might always be retained by the building, its steelwork was painted at the shop with Dixon's Silica-Graphite Paint, which, like Gibraltar, has stood and withstood the test of time.

AN INCREASE IN PRICES OF DIXON'S PAINT

Taking its cue from a number of other commodities, linseed oil has been rapidly increasing in price for the past year. The Dixon Company have made every effort to retain their paint prices at the former low level, but have finally been forced to yield and make a slight advance in prices on half gallon can, one gallon can and five gallon keg quantities. The old prices are retained on the ten gallon keg, half barrel and one barrel quantities, and if it is possible to refrain from doing so, no increases in these prices will be made.

The rigid standard of quality which has been adhered to since Dixon's Silica-Graphite Paint was first put on the market nearly fifty years ago, will be maintained. We have never considered for a moment the cheapening of our product, but have continued to buy only pure boiled linseed oil, even though the market was rapidly rising. Since we positively will not lower our quality, there was only one recourse left—an increase in our prices.

APPROPRIATE MUSIC

For a Restaurant.—"When the Swallows Homeward Fly."
For an Arctic Explorer.—"Farewell, Summer."
For a Defaulting Bank Official.—"It May Be Four Years."
For the W. C. T. U.—"Drink to Me Only With Thine Eyes."
For an Irish Prizefighter.—"Strike the Harp Gently."
For the Real Estate Promoter.—"There's no Place Like Home."

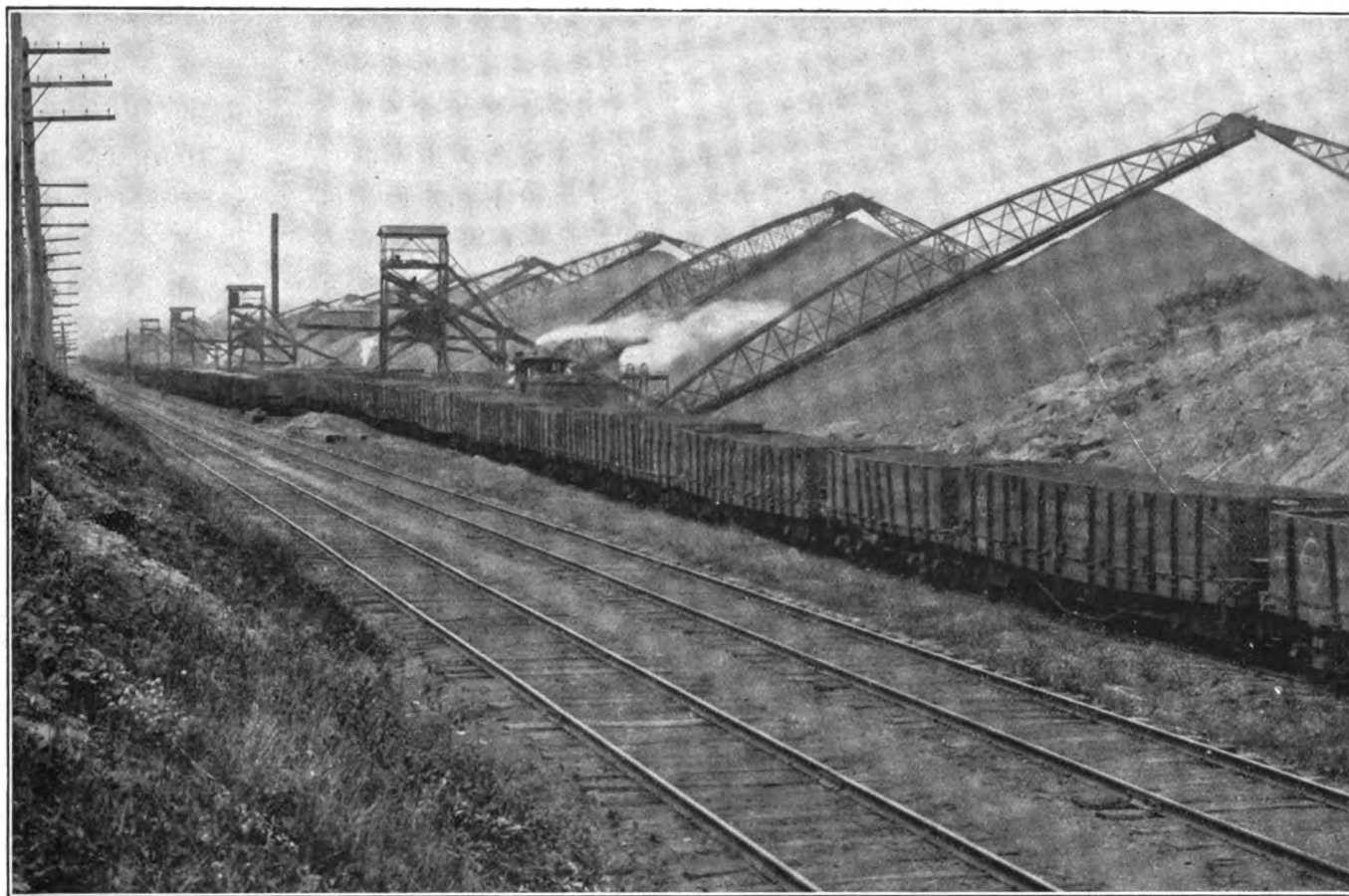
For the Ballet Girl.—"Arise, My Sole."
For the Wright Brothers.—"Flee As a Bird."
For the Milliner.—"Trust Her Not."
For the Critics.—"The Anvil Chorus."
For the Stock Exchange.—"You Never Miss the Water."
For the Boston Girl.—"Where Have You Been, My Pretty Maid?"

For Luther Burbank.—"The Praties, They Were Small Over There."

For Most of Us.—"If I had But Ten Thousand a Year."
For Anthony Comstock.—"How Can I Bare to Leave Thee?"

For the Perpetual Candidate.—"Silver Threads Among the Gold."

For the Baker.—"Roll, Jordan, Roll."—*Life*.



NEW YORK, SUSQUEHANNA & WESTERN R. R. COALING PLANT, ROCHELLE PARK, N. J.

The above illustration shows the coaling plant designed according to the *Dodge System* and built by the J. M. Dodge Company, of Nicetown, Philadelphia, for the New York, Susquehanna and Western Railroad Company, at Rochelle Park, N. J. This plant consists of ten piles, each pile containing 25,000 tons of coal, making a total storage capacity of 250,000 tons. The equipment for each pile consists of a steel truss, upon which is mounted a coal trimming conveyor, each of which has a capacity for storing about 1,200 tons of coal in a day of ten hours.

The labor cost for dumping the coal from the cars, delivery to pile, and reclaiming, screening and reloading the cars is less than five cents a ton.

This is one of the typical anthracite coal storage plants being operated by anthracite mining companies in the East, the steelwork of which is preserved against the elements by Dixon's Silica-Graphite Paint.

FRICTION LOSSES

What Tests and Experience Show When Dixon's Flake Graphite is Added to the Lubricant

Scientific tests by prominent authorities have proven conclusively that friction losses are much reduced and the carrying capacity of the bearings greatly increased when the lubricant contains the correct proportions of Dixon's Pure Flake Lubricating Graphite, and these tests are proven by actual experiences.

Sometime ago Professor W. F. M. Goss, Dean of the College of Engineering, University of Illinois, made some tests with

the Dixon Pure Flake Lubricating Graphite on ball bearings. A synopsis of this test we have published in pamphlet form and will be pleased to mail a copy to anyone who wishes it. As a result of these tests, Professor Goss says in part that the following conclusions may be drawn:

"A combination of graphite and lard oil makes up a lubricating mixture which, when applied to ball bearings, will accomplish everything which lard oil alone will do and which at the same time will give a lower frictional resistance of the bearing and permit a large increase in the load which it may be made to carry.

"An oil as light as kerosene, when intermixed with graphite, will be converted into an effective lubricant for ball bearings when operated under light or medium heavy pressure.

"Even so viscous a lubricant as vaseline will better perform a given service in the lubrication of ball bearings when supplemented by small amounts of graphite. The bearing to which the mixture is applied will work with less frictional resistance and will carry a heavier load than when vaseline alone is used.

"The admixture of graphite with either a liquid or viscous lubricant, serves both to reduce the friction and to increase the possible load which a bearing thus lubricated can be made to carry."

We have also a record of Professor Goss' extensive tests with graphite as a lubricant published in pamphlet form under the title of "A Study in Graphite," on which we placed a charge of twenty-five cents per copy, though we have distributed a limited number of these free, and will continue to do so until the supply is exhausted.

If you are interested in the use of graphite in connection with many classes of modern machinery, ask for a copy of the latest edition of "Graphite as a Lubricant."

AN AUTHORITATIVE OPINION ON DIXON'S SILICA-GRAPHITE STEEL CAR PAINT

We are glad to be able to publish below a letter from Mr. T. J. Hutchinson, master painter of the Grand Trunk Railroad System. Mr. Hutchinson has behind him a long experience in successful railroad work, and has filled a number of prominent positions. In addition, Mr. Hutchinson is well known for the able papers he has read before various railway associations.

The following letter comes to our Mr. H. W. Chase of the Paint Department, and what especially pleases us is the fact that Mr. Hutchinson's judgment and experience cause him to substantiate our claim that Dixon's Steel Car Paint is correct in principle—it starts with the right foundation, viz, the best of linseed oil and absolutely inert pigments.

The true cost of steel car painting is according to the permanency or durability of coating, which alone decides *how often* in a given period the cost of materials and the labor on same must be expended. If cars are painted one-third as often with Dixon's Silica-Graphite Steel Car Paint, you are thereby avoiding the outlay of two applications of labor and material, as well as avoiding the loss of car service during the time of both repaintings.

We are pleased to quote Mr. Hutchinson's letter direct and in its entirety:

"I have just read your little booklet explanatory of your steel car paint.

"Allow me to compliment you on this clear and practical argument as to the requisites in a protective coating.

"I was glad to see you had not made the mistake of going into the realm of the chemist to prove that pure linseed oil and inert carbon pigments combined would meet all requirements of a protective coating for metal structures.

"The application of any coating put on with a brush takes about the same time, hence it is the permanence or life of the coating only that should be considered—but, alas, when the cost of material is mentioned, that is where the "Coal Tar Paint" man gets his innings, notwithstanding the fact that any purchasing agent of experience will admit that what is cheapest is not always the best, and this has been very clearly demonstrated by a recent report of the most eminent chemical authorities in a comparative test of the above substitute—which stated their test plates showed that the coal tar paints would break up rapidly and through unequal expansion could not be depended upon for protection any length of time.

"Considerable money might be saved if our railway purchasing agents could be persuaded that practical tests were the surest guide and that substitutes that I often class with counterfeits, very often require bolstering up by some delusive technical description to deceive the unwary, and in most cases prove inefficient and costly.

"From my experience I find that when steel or iron, painted with coal tar, became abraided, corrosion would proceed more rapidly, necessitating doubling the expense of repainting in a short time.

"With best wishes, I remain,
Sincerely yours,
(Signed) T. J. HUTCHINSON."

THE MYSTERY OF THE SEA

We who live on the land can but faintly, if at all, comprehend the superstition of the sailor, whether he be the ordinary sailor or the cultured captain or master of a ship.

We can, however, through the writings of those who know and through what we read in the newspapers, learn to some extent of the secrets held in the great ocean.

One of the latest mysteries is that of the British bark Invernesshire, which sailed from Hamburg on March 2nd for Santa Rosalia, Cal., and was found at anchor and abandoned off the Falkland Islands. Nothing was ever heard of the master and crew, and nothing is known of the cause that led them to anchor and abandon their vessel.

This recalls the fate of the brig Mary Celeste of New York, which for forty years has been the prize riddle of the sea.

The Mary Celeste sailed from New York for Genoa with a cargo of petroleum and alcohol.

The brig was in first class condition, well manned and well equipped in every way, and when she sailed from New York the entire ship's company was happy and contented. Yet none of them was ever seen again dead or alive.

The ship sailed from New York, November 7, 1872, and on December 4, the same year, the ship was found off the Azores, drifting aimlessly about in light winds with her head sails set and all her other canvas down.

There was nothing to show why she had been abandoned or what had become of her people.

In the thirty-eight years that have elapsed since the Mary Celeste was abandoned, countless stories, all more or less fanciful, have been written about her and numerous theories have been advanced in explanation of this greatest of sea riddles.

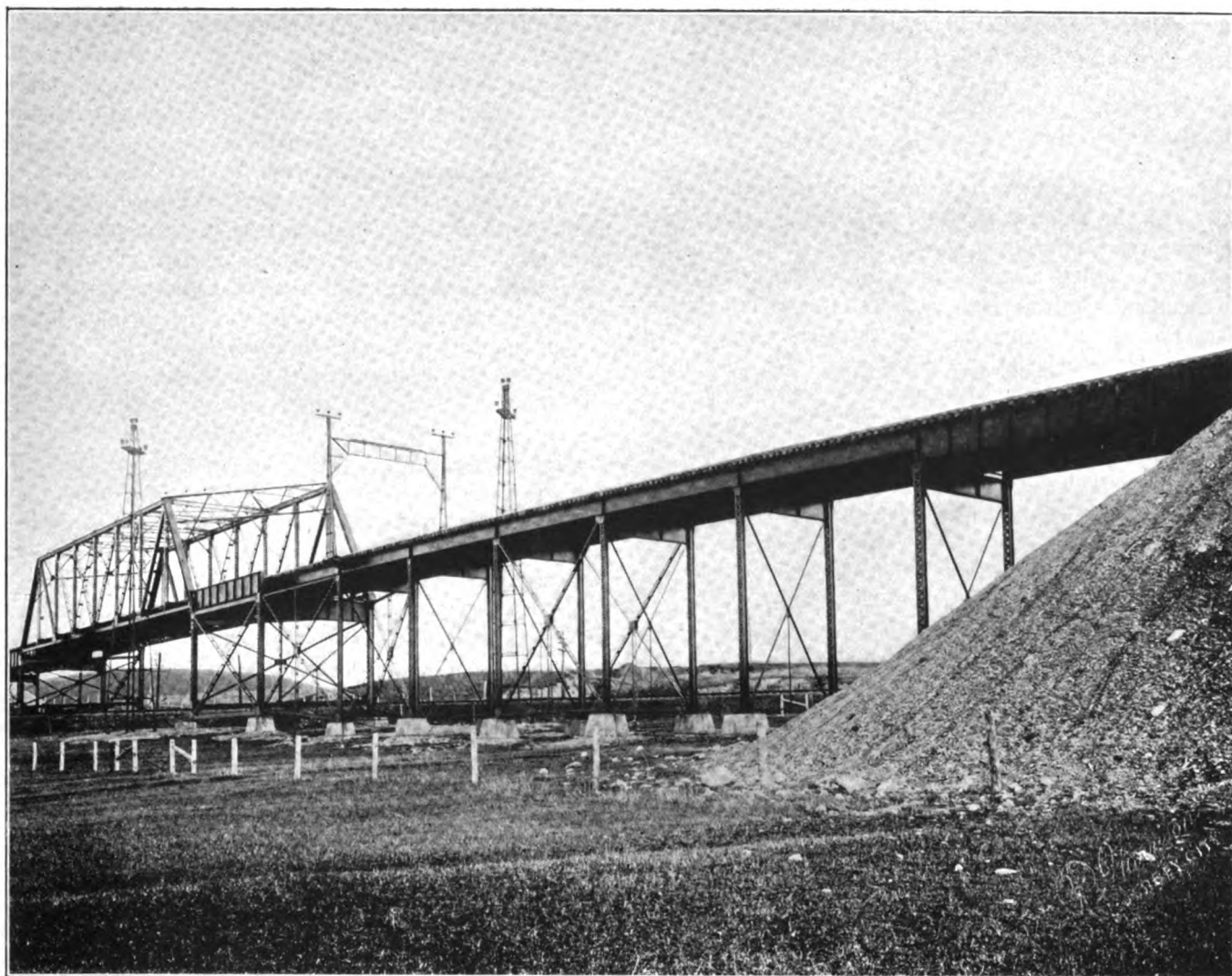
"Pain is the cry of the nerves for better blood", and the groan or squeak of an engine or machine is the cry of the metal for better lubrication.

A sure cure for any groan or squeak is

Dixon's Flake Graphite.

Remember that Dixon's Flake Graphite is furnished in finely powdered form when desired—but with all the virtues of the flake, and will not ball up or cake.

Joseph Dixon Crucible Co.,
Jersey City, N. J.



**TROLLEY BRIDGE OVER WEST SHORE
RAILROAD TRACKS AT EAST
WEEDSPORT, N. Y.**

The above reproduction from photograph, shows a part of the bridge belonging to the Rochester, Syracuse & Eastern Electric Railroad. This structure belongs to the Beebe System of trolley roads and is 807 feet long.

This information is supplied to us through the courtesy of Mr. W. A. Steckel, who is road master for the trolley system before mentioned. We are glad to be able to report Dixon's Silica-Graphite Paint is offering thorough protection for all the steel work included in the bridge shown.

QUOTATIONS

"Whenever a man sells there has to be somebody who buys, and a salesman is no more anxious to sell than the purchaser is to buy, provided the salesman has what he wants at the right price."

"There should be a definite purpose in every call a salesman makes. That is the surest way to interest prospective customers in his goods."

"After a salesman has established relations with a concern, he should continue to present tangible ideas for consideration. This doesn't mean that it is necessary for the salesman to have a new idea every time he calls on a customer, but a

salesman should certainly keep his customer's business constantly before him and study out new ideas that he can present for the buyer's consideration.

"There would seem to be nothing quite so interesting to a man as the article which is going to help him make some money. If he is a dealer, he wants to know about the stuff that will sell, and if he is a manufacturer, he wants to know about the material that will serve him best. There is nothing so interesting to such people as a good talk on products for use in their business."—From O. C. HARN.

"ETERNAL VIGILANCE"

Says *The Philistine*, the tendency of property of every sort is towards depreciation and dissolution. Only eternal vigilance and tireless industry keep a manufacturing plant or farm effective.

The men who operate our great enterprises—mills, factories, elevators, banks and department stores—know nothing of ease. Their working hours are not limited by the whistle. They sweat blood to meet payrolls and to keep the wheels of trade revolving.

Modern business is a most exacting taskmaster. It says, "Man shall have no other gods before me." It demands every ounce of energy its devotee has. The thought of a good time is not for the business man. He works and works eternally. He works because he can't stop.

SOME FALLACIOUS PAINT THEORIES

Read at Meeting of Society of Chemical Industry, New York,
April 22, 1910

By A. H. SABIN

It has long been known that chemical action occurs coincidentally with and causes or is caused by electrical disturbances. For many years, probably a century, it has been known that impurities in a plate of metal, when the latter is placed in an acid solution, will cause local currents to come into action; in the Bunsen and Grove batteries these are in great part prevented by amalgamating the surface of the zinc plates with mercury. It has long been known that iron or steel plates exhibit the same phenomena, and to this action has recently been given the appropriate name of autoelectrolysis, and the explanation of it in terms of modern theories of solution and ionization has been the subject of voluminous papers by numerous chemists. Some able chemists regard these theories as unsatisfactory, though they are generally accepted; it should not be forgotten that a theory does not prove anything, but must itself be established by facts, which latter are known by observation. A correct theory is an important, though not absolutely necessary, aid to the acquisition of knowledge, which it classifies and arranges in order.

A theory which correctly explains the rusting of iron and steel is of great value; it is an invention rather than a discovery and should not be cited to prove a statement or to establish a fact.

Within the last few years attempts have been made to determine the value of pigments for the protection of iron by the following experiment: The various pigments are made into a paste with water; steel plates (knife or razor blades) are covered with these pastes and wrapped in wet paper; they are then kept at a constant temperature, or at the same temperatures, for some hours or days, after which they are examined and the amount of corrosion determined.

It is well known that iron practically does not rust except in the presence of water, and rusting which takes place under paint is due to the porosity of the film which admits water. It is assumed that the protective action of the pigment is related to its action in the presence of water, and it is further assumed (contrary to the fact) that the oil may be considered as only a binder, to keep the pigment in place. If these assumptions were correct, it is obvious that these experiments would seem to indicate how the pigment really acts.

These experiments were first suggested by G. W. Thompson, who found that they did not lead to conclusive results and discontinued them; they were then taken up by others, notably by A. S. Cushman, whose writings and lectures on the subject have caused his name to be most conspicuously connected with the matter. He and others co-operating with him, have in this way arrived at a tentative classification of pigments as stimulators and inhibitors of corrosion, and indeterminates.

In this classification the second best inhibitor is zinc oxide, and in this division are also Prussian and ultramarine blue; the very worst stimulator is lampblack, and among these are carbon black and graphite; among the indeterminates are calcium carbonate and sulphate, china clay, red lead and orange lead.

It may unhesitatingly be said that there is no relation be-

tween the classification of pigments based on this system of tests and that based on actual service in oil or varnish paints. This is not an opinion; it is a fact known to every one practically connected with the business. Any system of tests which proves that lampblack and graphite are worse paints for iron than whiting or calcium sulphate, or that these latter are about like red lead, and that ultramarine is good for this use, and the best of all is white zinc, simply breaks down on inspection. White zinc is a valuable pigment, unequalled for some particular work; but it is worthless for a paint on iron. Whiting is a damage to any oil paint which contains it; and calcium sulphate will rust iron every time.

The Scientific Section of the Paint Manufacturers' Association put out, in November, 1908, some steel panels on a special fence at Atlantic City, which were expected to show the value of this system of testing; photographs made a year later show that the white zinc and whiting paints on these panels have perished, while the lampblack and graphite are as good as new. These tests were not needed, as experience for fifty years or more has invariably shown the same thing.

The obvious fact is that pigments are not suspended in water but in oil, and linseed oil is one of the best insulators known; electrical apparatus of excessively high voltage (Tesla coils) is often submerged in linseed oil, to insulate it; and while a dried film may, because of its porosity, leak electricity, there is no reason to suppose that linseed oil is not an insulator of great efficiency, nor to doubt that the particles of pigment are surrounded by an insulating film. It is not reasonable to suppose that pigments imbedded in a solid insulating compound will act as they do in liquid water; and whether it is reasonable or not, it is certain that they do not. When Dr. Cushman says "the fact has been brought out that some pigments which have been supposed to be excellent for protecting steel should never be used," it is simply funny. No one doubts his good faith, ability or accuracy, but he and his collaborators have been so carried away by the interest and ease of carrying on these experiments, that they seem to have lost sight of the fundamental thing, which is that we wish to investigate linseed oil paints, and that facts known by the common experience of half a century are not changed by a week's experiments with kalsomine. These tests may prove something, but we do not yet know what it is. "The value of an observation lies in the application of it," and there is no application. A test which appears to prove something which everyone knows is not so, is of no value; it involves a waste of time which might better be given to something useful, or even useless.

Probably certain basic pigments, such as red lead, may sometimes act chemically to inhibit corrosion, and soluble sulphates may stimulate it; but most of this talk about "inhibitors" and "stimulators," like the similar talk about the "law of minimum voids," is of value only as salesman's talk, —may help to sell goods, but is of no use in making or using them.

A LITTLE STRAW IN THE WIND OF AN OCTOBER DAY

Please send us one dozen Eterno pencils No. 2050 by mail. Have had some and as they are all used up and we liked them so well, we take this means of getting more.

THE CARPENTER'S PENCIL ARRAIGNED

Probably most of the readers of GRAPHITE know the shape of a carpenter's pencil, if not, the illustration will explain.

A correspondent in Tacoma, Washington, writing to *Carpentry and Building*, says:

"There may be some kinds of rough framing, such as large wet timbers, where the broad trail of this kind of carpenter's pencil is necessary to catch the eye of the man behind the saw, but I think that such occasions are sufficiently rare to have them discarded in favor of the small round or hexagon pencils. The small round or hexagon pencils are quickly



DIXON'S RED & BLACK No. 997

sharpened and will last long enough for anyone. Their use tends to make one more careful in measuring and cutting, and carefulness begets skill, and skill commands money and respect and raises the standard of the craft. Therefore, I say, down with the carpenter's pencil. It is a large, unwieldy instrument of destruction, desperation and demoralization, and I do not wonder that errors in measurement occur where such a clumsy pencil is used.

"Avaunt and quit my sight! let the earth hide thee!

Thou thing of cedar and of paint;

With section elliptical and color rose red,

Thy wiles are countless, thy lead is hard;

Thou hast no point upon that end

Wherewith we do mark withal!"

Some twenty years ago educators insisted that small pencils should be made for small hands, and therefore the Dixon Company, as well as other pencil companies, was called upon to manufacture a pencil smaller in diameter than the ordinary pencils for the use of school children, especially the smaller children. Now the pencil companies are manufacturing for school children, especially the smaller children, a pencil much greater in diameter than the regular lead pencil. The Dixon Company stamp such a pencil "Beginners."

It may therefore be fully in order for the old-time big and clumsy carpenter pencil, with its wide lead, to be relegated to the background and for a smaller and more attractive pencil to come forward, and one with a regular round lead. In fact, very many carpenters are making use of such pencils. Our own carpenters have long preferred a regular diameter pencil with its small lead and have no hesitation in saying that with such a pencil more accurate measurements can be made.

APROPOS THE CROWING OF ROOSTERS

We recently reprinted a little item clipped from the *New York Times*, in which a correspondent had inquired why it was that as we go farther south we find the roosters crow for longer periods through the night. The correspondent went on to say that in Florida the roosters crow at intervals throughout the entire night. Whereupon a friend informs us it is not necessary to go to Florida to observe this phenomenon, that right here in Jersey City, located near his home, is a rooster that has the all-night crowing habit.

CONCERNING A MERCHANT MARINE

Leslie M. Shaw, former secretary of the United States Treasury, says:

"We are proud of our navy. We sent sixteen battleships around the world to impress the timid ones of the earth with our prowess.

"We are in fact, however, the laughing stock of every military and naval country, for we were compelled to hire twenty-seven foreign ships, floating foreign flags, to take the necessary coal to our battleships.

"One hostile shot from a foreign foe would have scattered the colliers to the four winds and our fleet would have been left high and dry. We have reached a time when we do everything by sentiment.

"There is no sentiment for the merchant marine, therefore we have none, but we need it. We have approached the time when it is political suicide for a man to attempt to be a statesman. A real statesman, with sentiments and opinions of his own, must either capture the multitude or he might as well resign his seat in the Senate or the House."

THE ENEMY OF RIMS OF AUTOMOBILE WHEELS

The worst enemies of rims are damp, which rusts them, and concussions, which throw them out of shape. Rust makes its appearance as soon as the paint chips off any part of the rim; and you know very well—at or least you ought to know very well—that a rusty rim shortens the life of its tire. Therefore, always see that your rims are well painted.

—Automobile Dealer and Repairer.

One of the best mixtures known for the protection of such rims is Dixon's Motor Graphite, which may be applied dry and well rubbed in, or mixed in the form of a paste, using a little linseed oil; or it may be using gasoline only.

The idea is to have a mixture that will dry very quickly, but not dry before it can be well rubbed in.

AN OBLIGING WAITER

Mr. Fred. Newed, having gone through the usual joy of having his eyes and ears filled with rice, and having partially recovered from the trials and tribulations he went through while getting a license under the new law of New Jersey, finally found himself with his blushing bride away down in Maine in a comfortable hotel. He confided to the Irish waiter that although he was over forty it was his first matrimonial venture, and he would consider it a great favor if Larry would not tell anyone of the fact. Larry promised faithfully and was rewarded with a substantial tip.

During the course of the next day they noticed that at each meal everybody stared at them curiously, and not being able to stand it any longer, Fred. called the waiter up and said: "Larry, the people stare at my wife and me. I hope you haven't told anyone we are newly married."

"Me tell 'em?" said Larry. "Is it likely O'id go against orders? Why, whiniver anybody troied to pump me O've towld 'em you weren't married at all."

FACTS ONE SHOULD KNOW ABOUT A GAS ENGINE

To be able to intelligently converse and write on the subject of gas engines, one should be familiar with the everyday expressions and terms that he will encounter, also a few things worth considering in purchasing a gas engine and its care.

Horse Power.—This is a comparison or relation and was established by James Watt as the power of a strong London draught horse working a short interval, and was used by him to measure the power of steam engines, and is equivalent to the continual lifting of 550 pounds a foot a second.

A boy is capable of exerting one horse power if he can move fast enough, illustrated as follows:

Say he weighs 110 pounds and can run in one second up a flight of stairs which is just five feet in perpendicular height above the starting point; he will have lifted the equivalent of 550 pounds one foot in one second.

There are two horse power ratings which a gas engine has, and one should be careful that he thoroughly understands just what they mean.

The indicated horse power, often written I. H. P., means the power which an engine is capable of developing in the cylinders. It is obtained from the following formula:

$$\frac{\text{PLAN}}{33,000}$$

33,000 is a constant and is the number of pounds that would have to be lifted in a minute, (550 x 60). *P* is known as the mean effective pressure, written M. E. P. This is obtained by means of an indicator and a planimeter. The indicator reproduces graphically the exact operation of a complete cycle of the gas engine. *L* is the length of the stroke in feet, *A* the area of the piston in square inches and *N* the number of explosions per minute.

From the above, it can be readily seen that the above rating would be a builder's rating and is the one generally used by them.

One may roughly determine the I. H. P. of a gas engine by the following formula:

$$\text{I. H. P.} = \frac{D^2 \times S \times N}{12.5}, \text{ where } D \text{ is the diameter of the piston}$$

inches, *S* the length of stroke in inches and *N* the number of cylinders. This is based upon the assumption that the engine will make one thousand revolutions a minute and is a four-cycle; also the assumption is made that the average M. E. P. is eighty pounds per square inch.

A formula which is often used is I. H. D. = $\frac{D^2 \times N}{2.5}$. The writer prefers the first formula as it takes into account the length of stroke.

If the engine is a two-cycle one, it is the rule to take the I. H. P. as two-thirds of the above formula.

D. H. P. (developed horse power) is the horse power that the engine actually delivers and may be measured by means of a Prony brake. This consists of a strap fastened around a wheel and attached to an arm with an adjustment for tightening and loosening the strap. The arm should rest upon a standard placed on a scale. It will be necessary to determine the constant. This is done by revolving the wheel forward and then backward, noting the reading upon the scale in both

instances. These should be added and divided by two. The scale should be set so that it exactly balances the maximum tension that you can get upon the brake band without stopping the engine and the scale reading noted. Deduct from this the value obtained by rotating the engine forward and backward as indicated above and use the following formula:

$$\frac{6.28 \times G \times N \times A}{33,000}$$

where *G* is the reading on the scale (after making the deduction as indicated), *A* the length of arm from the center of the fly wheel to the point of contact on the scale in feet, *N* the number of revolutions per minute. This will give the horse power the engine is capable of delivering.

$$\text{The mechanical efficiency is } = \frac{\text{D. H. P.}}{\text{I. H. P.}}$$

Compression.—After a mixture of gas and air is drawn into the engine (the third stroke in a four-cycle engine and the second in a two-cycle engine), it is compressed and the intensity or violence of the explosion depends upon the compression.

There are two methods used to obtain a high compression. First, to make the compression space very small. Second, a tight fit between the piston and cylinders.

Leaky compression is caused by fouled piston rings or a poor fit between the piston and cylinder walls. Conditions are always better where flake graphite is used with the lubricating oil.

The object of the flake graphite is to attach itself to the minute irregularities which exist in the metal surfaces, building up a graphite-to-graphite coating of marvelous smoothness.—*Gas Review*.

DIXON'S graphite publications sent free upon request.

Don't Ball Up

your engine cylinders or bearings with an amorphous graphite.

Don't get a wrong idea of the value of graphite by using the wrong kind.

Dixon's Flake Graphite

is furnished in three degrees of fineness—the third a fine powdered flake that will not ball up.

Joseph Dixon Crucible Co.,

Jersey City, N. J.

THE FASTIDIOUS USE OF THE PENCIL

The fastidious pencil user selects a hexagonal pencil without tip and rubber. If you will observe the shape of the aperture filled by the pencil as held in the hand, you will see that it is in the nature of a triangle. You will also see that three alternate faces of the hexagonally shaped pencil coincide with three sides of the triangle. The round pencil really does not fit the hand so well since it forms points rather than surfaces of contact, and to secure as much actual surface of contact with the round pencil as with the hexagonal, it is necessary to hold it somewhat tighter. Another objection to the round pencil is its tendency to roll and fall on the floor, which almost invariably means that the point will break.

The objections to the tip and rubber are many from the fastidious standpoint. In the first place, the rubber performs a distinct and separate function. This function is best performed by a much larger piece of rubber provided in the separate eraser; being larger, the separate eraser holds its moisture longer and provides more erasive surface. It can be more conveniently handled and does not collect soil so fast as the pencil eraser which is carried about considerably in the pocket. There is one other objection the epicurean pencil user urges against the tip and eraser, and that is the fact that in the full length pencil a tip and eraser give it a certain top heaviness.

In sharpening a pencil many make a slight nick by running a knife around its circumference or perimeter, about an inch from the end. This nick is then used as a guide mark and the pencil is sharpened from this nick down to the point.

The sharpened part of the pencil then presents an even appearance at the point where it joins the varnish. The knife with which a pencil is sharpened should not have too keen an edge, though it should be sharp. First the wood is cut away as evenly as possible until a sufficient length of the lead proper is exposed, and then the lead is sharpened down to a point. A finishing touch is provided by rubbing the lead on a piece of paper, holding the pencil in practically the same horizontal line as the paper and rotating it.

Those who claim to know, state that the pencil should be carried in the pocket with the point down. Just exactly the reason for this is unknown to us, but we may state for the benefit of those who have never tried it, that no difficulty will be experienced with the point wearing holes in the pocket, as might at first thought seem likely.

The fastidious pencil user begins to exhibit his fastidiousness in the purchase of his pencil. We want to recommend to him "Dixon's Manual Training," which is a brand new pencil we have recently gotten out, guaranteed to meet the satisfaction of even the most difficult to please. It is finished in a rich bronze green that is pleasing and restful to the eye. Its leads are smooth and tough, but responsive to the most delicate touch. These pencils are supplied in nine grades, running from BB, a very soft pencil, to 6H, an exceedingly hard one. The numbers HB, F and H are medium grades and will probably be found best suited to the average user, fastidious or otherwise.

EIGHTY per cent of the business failures last year were non-advertising concerns.—*Gibson's Magazine*.

ADVERTISING AND HIGHER COST OF LIVING

After solemn deliberation, the Senate Committee appointed to investigate the higher cost of living, reported that it was due largely, if not chiefly, to the amount spent for advertising. Whether this was the best joke the committee could think of at the time, does not appear, but pursuant to their conclusions, George Horace Lorimer, editor of the *Saturday Evening Post*, points out some pertinent facts.

Advertising is a factor in distribution which in turn is one of the chief factors in selling. Mr. Lorimer goes on to state how many millions are paid to the railroad companies for transportation of goods each year. If no shipping was done over the roads, this amount of money might be saved (?), but it would cost many times the amount saved (?) to send the goods by stage, for instance.

In like manner, by stopping advertising the concern would cut down their running expenses on that score, but in all probability they would have to increase selling costs in other directions or else lose business to an extent that would more than offset the saving (?) on the cost of advertising.

DIXON'S PAINT PREVENTS DECAY

With Apologies to "Longings"

In our September issue of GRAPHITE, we printed a poem from the pen of our Miss L. M. Stocking of the Paint Department, entitled "Longings." As the poem gave evidence, Miss Stocking has a well developed esthetic nature. Those of us who know her as a member of the Dixon force, are more apt to think of her, however, as a practical business woman, forever promoting Dixon's Silica-Graphite Paint. The parody below is presumed to be a composite picture of the author's esthetic and practical nature. It typifies the way in which she takes every opportunity to introduce the subject of Dixon's Paint.

When days grow long and summer heat
Like a furnace glows on roof and street,
When the leaves of the city's trees are dry,
Then Dixon's Paint be sure to try,
Nodding and dosing there comes to my brain
The musical words of an old refrain
That lives in my ears the livelong day,
"Dixon's Paint prevents decay."

Where mighty trees cool shadows throw
On mossy banks and ferns below,
When the quail pipes in the early morn,
All substitutes for Dixon's scorn,
Where the fishes leap in the river's tide
And under the roots of the willow hide,
And freighted with fragrance, soft winds play,
"Dixon's Paint prevents decay."

The hum of the bee, that uneasy rover,
As he gathers sweets from the purple clover,
The robin's song at the close of the day,
Telling how Dixon's Paint will stay
To draw a long new breath of life,
And save all steel from corrosion's knife—
Then users never fail to say,
"Dixon's Paint prevents decay."

RAVAGES OF RUST

You realize the foolishness of leaving steel unprotected, you know how quickly it yields to rust.

To apply a paint that only offers "fair" protection is, however, merely a step in advance of no protection—the very best paint is never too good for the expensive steel structure.

Dixon's Silica-Graphite Paint

resists the ravages of rust and offers good protection to the steel structures for long periods. It is capable of this protection because it is "designed" to meet the particular needs of protective service. Dixon's does one thing and does that one thing well—it protects.

The "reason" for the service given by Dixon's Silica-Graphite Paint is found in the inert pigment, silica-graphite, and the pure linseed oil vehicle.

Write for "Colors and Specifications."

JOSEPH DIXON CRUCIBLE COMPANY,

JERSEY CITY, N. J.



GRAPHITE

VOL. XII.

NOVEMBER, 1910.

No. 11.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.

CARE OF WATER TANKS

A circular letter under the above heading, sent out by the South-Eastern Underwriters Association, includes two paragraphs which are of especial interest. It will be readily understood that the endorsement of an organization of this kind rests entirely on what they sincerely believe to be the merits of the goods, and is free from all bias and prejudice. In view of this fact, the paragraphs which we quote below take on infinitely more significance than those expressions of opinion from an interested person or even a testimonial from a satisfied user. We quote from the circular letter:

"It is not our custom to advertise any special device or material, but in this case, from our investigations, we

have come to the conclusion that Dixon's Silica-Graphite Paint is an excellent paint for this class of work. In fact, it seems to give better service than any other paint we have heard of, and for your further information we understand the price of this paint is \$1.50 per gallon. (See corrected price below.)

"There may be other paints that are good paints for this class of work, but replies we have received from tank builders indicate that in their judgment this is the best paint on the market."

As all those in touch with the paint situation know, the price of linseed oil has been going up rapidly for sometime past. The Dixon Company has always used only the best grade of strictly pure, double kettle-boiled linseed oil. This standard has been maintained without deviation ever since the paint was first manufactured nearly fifty years ago, and in order that its high quality might still be maintained, it was absolutely necessary to advance our prices on the paint. The price per gallon on Dixon's Silica-Graphite Paint is now \$1.85 in gallon quantities. It is to be remembered in this connection, however, that while paint is bought by the gallon its real value to you is in proportion to its length of efficient service. It is on this basis of service that Dixon's Silica-Graphite Paint has made good.

NEW PRICE LIST ON DIXON'S PAINT

We quote below the revised price list of Dixon's Silica-Graphite Paint, which took effect October 1.

Bbl. (abt. 50 gals.)	\$1.50 per gal.
25 gals. in $\frac{1}{2}$ bbl.	1.55 "
10 gals. in keg,	1.65 "
5 " "	1.80 "
1 gal. in pail,	1.85 "
$\frac{1}{2}$ " "	1.95 "

We also reproduce that portion of the letter which was sent out at this time and is self-explanatory of the necessity for our advance in paint prices:

JOSEPH DIXON CRUCIBLE COMPANY,
JERSEY CITY, N. J.

GENTLEMEN:—

The continued high price of linseed oil has made it absolutely necessary for us to make the advance in the prices of Dixon's Silica-Graphite Paint, as per the revised price list enclosed.

You will readily appreciate the necessity for our action in order that we may maintain the high quality of Dixon's Silica-Graphite Paint, and continue to use the best grade of strictly pure double boiled linseed oil.

Yours very truly,

JOSEPH DIXON CRUCIBLE COMPANY,
Paint Department.

"THE MASTER LUBRICANT"

Dixon's Flake Graphite

An engineer has well said, "Dixon's Flake Graphite is the master lubricant." It masters and brings friction under perfect control.

It overpowers and subdues the tendency of bearings to heat.

It gives force and power to all oils and greases to which it may be added.

It is not affected by heat or cold, acids or alkalis.

Dixon's Flake Graphite is prepared in coarse flake, medium flake and finely powdered flake.

Flake graphite remains indefinitely on the bearing surfaces. The flakes are pinned to the microscopical points that are always on metal bearings. They build up such irregularities and form a veneer-like coating of great endurance. The thin flakes of graphite are never squeezed out and never flow out with the oil or grease, and they never form into balls in bearings or in engine cylinders.

Dixon's Flake Graphite is "the master lubricant" for all time and for all kinds of machinery, both great and small.

DIXON's graphite publications sent free upon request.

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

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 Graphite Products, Ltd., 218-220 Queen's Road, Battersea, London.

RETURN THE POST CARD IF YOU WANT "GRAPHITE"

With this issue of we are enclosing a Post Card which should be filled in and returned if you desire to receive GRAPHITE for 1911. We want to be sure that everybody desiring GRAPHITE receives it.

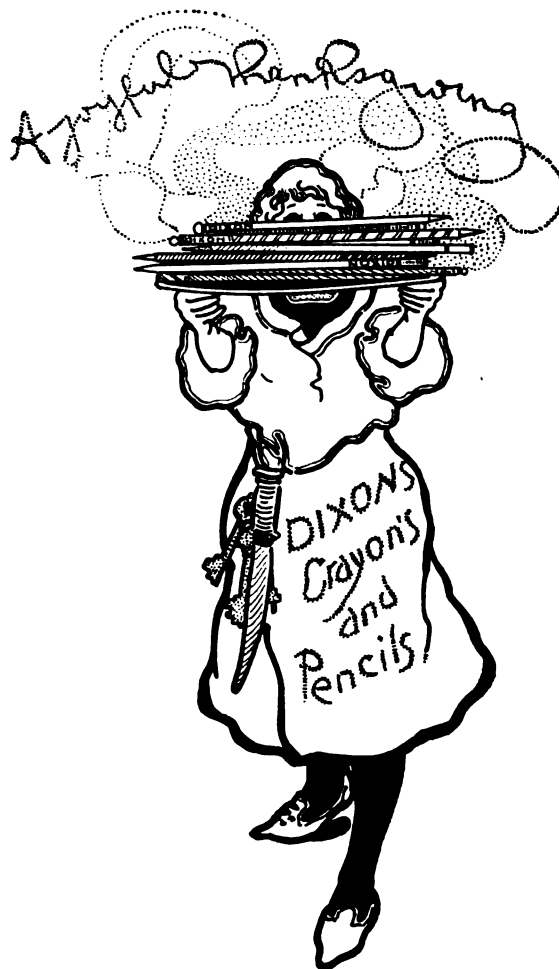
If you are among those who desire to receive our publication for the coming year, fill in, stamp and mail Post Card—and we will do the rest.

DIXON'S graphite publications sent free upon request

AGAIN IT'S THANKSGIVING TIME

It seems as though one Thanksgiving were hardly over before the next one arrives. At least, the time intervening does not appear to be sufficient to enable us to prepare some real nice Thanksgiving article such as we had planned last year to write this year.

Not that we object to Thanksgiving Day. Of course, we all have our troubles, but the optimist sees even in these an advantage. Troubles help to develop us, they give strength of character, they teach us resourcefulness, they instill fortitude. And besides, most of our troubles are more imaginary than real. That at which we scowl or cry today, appears not at all serious tomorrow.



Necessarily we are preparing this item considerably in advance of Thanksgiving Day, therefore we do not know exactly what the quotation will be this year on turkeys. Reasoning by analogy, we presume that the price of the prize bird will be such as to render its possession even sweeter than usual. Most of us, however, do without turkey for some 360 odd days in the year, so that even if worse comes to worse, we can dispense with the bird without serious deprivation.

But here's to the Thanksgiving spirit, which all may have who will.

IN THE SMALLPOX HOSPITAL

First Patient:—"Haven't I seen you somewhere before?"

Second Patient:—"Certainly. You are the physician who vaccinated me."—*Life*.



MUTUAL ELEVATOR, BUFFALO, N. Y.

We show above cut of the largest elevator in Buffalo, which belongs to the Mutual Terminal Company. This elevator has a storage capacity of 2,500,000 bushels and can elevate 30,000 bushels of grain per hour. It has facilities for loading fifteen freight cars per hour, and 15,000 bushels an hour in canal boats, while simultaneously unloading grain from vessels.

All the exposed metal work of the Mutual Elevator was painted in 1902 with Dixon's Silica-Graphite Paint, Natural Color. Up to the fall of this year, no repainting was done, but we have just received an order for eight barrels to be used on the structure. This means that Dixon's gave eight years' service—a record of which we are justly proud and with which the Mutual Elevator Company is justly pleased.

PURE AIR—MOST VITAL OF ELEMENTS

The August issue of *McClure's Magazine* contained a very interesting and instructive article, entitled "Oxygenizing a City." This article goes on to describe the work done by Dr. Wm. A. Evans in behalf of the city of Chicago.

Dr. Evans' attention was first directed to the situation by the deaths from tuberculosis in the Chicago Zoological Garden. The victims included practically every species of animal, though the monkeys were especially susceptible. The keeper of the zoo had made every effort to provide each species with a temperature encountered in its native haunts. To this end, the monkey house, for example, was kept at a temperature of eighty-five degrees throughout the winter. But even under these conditions tuberculosis claimed most of the animals before the year was out.

When Dr. Evans took up the matter, a new shipment of monkeys had just been consigned to the zoo, among which were five animals which appeared to be already in declining health. Dr. Evans took these five for his experiment, which was to keep them in the open air during the entire winter. The remaining twenty monkeys in the consignment which appeared to be in normal health, were kept indoors, as had been the practise in previous years. When spring came, the twenty healthy monkeys that had been enclosed were all dead, while the five that had been kept outdoors with only a shelter, were alive and in better condition than at their arrival.

After this the open-air treatment was installed, and the article goes on to tell how the Lincoln Park Zoo is the only one in which ostriches may be seen plowing through the snow, and kangaroos jumping about when the temperature is below freezing point.

The experiments on the animals were so successful that Dr. Evans carried the matter further. He had installed on the street cars a system of ventilation which keeps the air fresh by drawing it in from the bottom of the cars and taking it out at the top. One of the school principals took up the work and established as a motto, "Less instruction and more oxygen." At this school desks have been removed in the lower grades, so as to give the children every freedom of movement. The windows are kept open even in zero weather, the children retaining their wraps and hats. On the roof of one of the Hull House buildings an open-air school has been established for tuberculosis children. It is reported that the treatment is meeting with success.

Dr. Evans then got after the bakers, taking them out of their underground caverns. He also conducted a campaign on the nickel theatres, where ventilation is most noticeable through its absence.

When Dr. Evans took hold of the fresh air problem, he found that the death rate from tuberculosis and pneumonia (impure air diseases) was on the increase. The death rate on tuberculosis was one hundred eighty-seven per one hundred thousand, which has been reduced to one hundred seventy-four per hundred thousand. While this is not a large reduction, it must be remembered that the campaign has not long been under way, and the fact that it is a reduction is the big point.

The work that Dr. Evans has done on a big scale in Chicago, may be done on a small scale by everyone. Fresh air is absolutely imperative, and even though the sensitive may seek to discredit it with such terms as "night air," "cold drafts," etc., it must be had in some available form. Night air is the kind of air we have at night and cold air must be expected in winter. This does not mean, however, that in the evening and during the winter time we shall inhale the impure air laden, as it was found to be, with dust, bacteria and microscopic particles of "soot, sand, hair, starch, wool from clothing," and other materials.

If necessary, fresh air is worth the price of some little physical discomfort.

HOT BEARINGS

Hot bearings, as may be expected, occur oftener in the dog days than in midwinter. The condition of the atmosphere, however, is never the main cause. Over-pressure, lack of lubrication, and excessive speed are among the chief causes of heating. Graphite is generally acknowledged to be a good cooling lubricant and should be mixed with a suitable form of grease. In all cases the trouble should be attended to as soon as possible.—*Railway and Locomotive Engineering*.

It was in railway service that Dixon's Flake Graphite first demonstrated its unusual ability to cure friction troubles of all kinds. In order to make schedules and keep within the oil allowance, engineers made use of Dixon's Flake Graphite. Today it holds sway in every engineering field where lubrication is a factor.

AMERICAN TRADE IN MEXICO

In the *Daily Consular and Trade Reports* we find the following with which we fully agree:

"American manufacturers should understand that if they wish to increase their business relations or if they desire to hold what trade they may now have with Mexico, they must send personal representatives who are able to speak and write the Spanish language fluently and who possess a thorough knowledge of the necessary technical terms. These representatives should be of pleasing appearance and address, know how to make friends and hold such friendship when once acquired, for, other things being equal, a customer will patronize the man he likes best; in fact, it may be truthfully said that the well-liked salesman will get and hold trade, even if his terms are not quite as favorable as those offered by a stranger."

We also have our own thought further reflected in the same source of information, that a salesman should represent but one line of goods and have an intimate knowledge of that line. That he should be able to explain it and illustrate that line. That he should also be better posted as to transportation routes, freight rates, classifications and similar matters, for all such things count in the selling of goods.

That the American manufacturer should have patience, knowing that a trade worth the having cannot be built up in a day. That the manufacturer should back up his representative in every possible manner, for the salesman knows better than the manufacturer the wants and wishes of the customer. All orders, no matter how insignificant, should be filled to the smallest detail.

All correspondence should be answered promptly in a polite and detailed manner, and if possible in the language of the country where the order is taken. The Latin-American especially is not accustomed to the laconic and concise style of American business correspondence.

Above all, full postage should be placed on all correspondence, for it seems to be specially annoying if a man is obliged to pay penalty postage often on catalogs which are printed in English and unintelligible to the intending purchaser; in fact, stop sending catalogs and prices in English.

As a rule, there are altogether too many important points overlooked by the American manufacturer, which goes to account for the frequent failure of the American manufacturer to get his goods into a foreign country. At the present time the Germans seem to be the masters in the matter of successful export business.

THE COMMERCIAL TRAVELLERS

The United Commercial Traveller's Association has 60,000 members throughout the country and represents an invested capital of more than \$2,000,000. Some months back they held a convention in the city of New York, and during that time had Greater New York fully in their grasp, including Coney Island, the theatres and all of the good things that Greater New York possesses.

A more enthusiastic set of optimists one could not hope to find.

"The Georgia peach crop is the finest we have had in years and the Alabama corn and cotton crops are looking fine," said

the Rev. H. C. Compton, Pastor of the Second Baptist Church, of Athens, Ala., the only Preacher-Commercial Traveller in the United States. The Reverend gentleman preaches for the love of it. His living comes from his work as a drug salesman and from his farm.

The United Commercial Traveller's Association is a force to be reckoned with. It has a membership, as already stated, of 60,000 and all are optimists. In fact, whoever saw a pessimistic drummer? They all look at the bright side of things. They tell and listen to tales of unexampled prosperity the country over. The corn, cotton and peaches of the South, the timber and wheat of the Northwest, the iron mines and other mines are all that they should be. Politics and the stock market cannot affect real prosperity.

The best of it all is these tales are true. There is no good reason why there should be so much discontent and uncertainty in business. The Commercial Traveller ignores the croaker. Let us all do the same. The Political Congress just closed has not apparently done much for prosperity, nor has it won the confidence of the people, but the Commercial Travellers know the whole country from the Atlantic to the Pacific, from Lake Superior to the Gulf. Nothing escapes them, nothing dampens their ardor. No wonder then that New York welcomed them and hoped that they would come again and frequently, bringing words of good cheer, reassuring facts about buying and selling, high wages and large profits.

With this issue we are enclosing a Post Card which should be filled in and returned if you desire to receive "Graphite" for 1911.

If you are among those who desire to receive our publication for the coming year, fill in, stamp and mail Post Card—and we will do the rest.

TUT, TUT, MR. COMPETITOR

We have recently seen advertised a product for use on wire ropes. We ourselves prepare Dixon's Waterproof Grease and Handy Rope Dressing for this purpose, and both our products give unusually good service for the lubrication and preservation of all wire ropes. Graphite, as all users know, is impervious to the action of acid or alkaline water, besides being a superior lubricant. It therefore combines within itself the necessary properties for the protection of wire rope against mechanical abrasion as well as chemical deterioration.

In the advertisement of our competitor, he goes on naturally to point out the advantages of his product, of which we have no complaint to make until he makes the statement that the solid material in his lubricant "never 'lumps' as graphite does." Possibly the reference here is made to amorphous graphite, which because of its irregular formation, will "ball up." But flake graphite, because of its flake formation, does not ball up. As combined in Dixon's Waterproof Graphite Grease, it gives an unusually good service in wire rope lubrication. The fact that it has given this service for years past puts it above the plane of criticism adopted by our competitor.

DIXON'S graphite publications sent free upon request.

TWENTY-FIVE YEARS OF SERVICE WITH THE DIXON COMPANY

Some men begin things early in life and do those things well. Mr. William J. Coane, manager of the Dixon Philadelphia Branch, is one of those men.

No man ever begun life younger than he. He has already arrived to the distinction of grandfather, and on September 24, 1910, he celebrated the attainment of twenty-five years of service with the Dixon Company by giving an outing and dinner to his Philadelphia staff and ladies.

As Mr. Coane has on his staff about thirty people, they together with the ladies who attended the outing made up a large and joyous party. In the afternoon there was a base-



WILLIAM J. COANE

Manager of Dixon's Philadelphia Branch

ball game, and in the evening there was a substantial dinner. After coffee and cigars were served, speeches were in order and later on the evening was completed with billiards and pool by those who were either too old or too much crippled by the baseball game to participate in the dancing. The entire affair was held at the picturesque Delaware County Country Club, and it was the unanimous opinion that it was the biggest kind of a success.

Mr. Coane is the dean of branch managers of the Dixon Company, yet his picture herewith will substantiate what we said in the beginning of this article, that he started out early in life to do things, and is at the present time a comparatively young man with all his old-time vigor and energy, and as yet free from gray hairs or a bald head.

LUBRICATION OF CHAINS

Graphite is an almost indispensable lubricant for chains and is very generally used for this purpose. It is common practise to simply smear the links with some graphite preparation, but experience and careful trial have proven that the heavy driving chains of motor cars require more than external treatment to meet the peculiarly severe conditions of strain, pressure and exposure. A suitable lubricant should penetrate to the innermost wearing surfaces, and be at once of a good and enduring quality.

The best possible way of treating driving chains, is to first

thoroughly clean them with kerosene or gasoline and then immerse them in a bath of Dixon's Motor Chain Compound. This bath is obtained by melting a sufficient quantity of the compound in a large flat pan. Two immersions are desirable, after which the chain should be dipped in cold water to set the compound, and hung up to dry. Before being replaced on the machine, the chain should be wiped off to insure the removal of all superfluous lubricant from the outside.

The treatment described insures thorough internal lubrication, and here is where lubrication is most needed. Every bearing surface is reached and provided with a graphitic coating. Rust and wear are prevented and dust and dirt do not get a chance to accumulate.

The temperature of the melted compound should be at least 180° Fahrenheit to insure sufficient fluidity. A preparation that is solid at ordinary temperatures is especially good for chain lubrication, since it takes up much less dust than an oil or grease.

Where it is not desirable to remove the chain, it may be polished with Dixon's Motor Graphite. This will be found beneficial to all parts reached, but does not equal the more thorough treatment with the chain compound.

We do not recommend a grease because it holds the dirt and dust, but if conditions or expediency make the use of a grease necessary or desirable, we would advise the selection of Dixon's Graphitoleo. This comes in convenient tubes that allow of quick and easy application, and the flake graphite in its composition will prevent the excessive wear that would result if a plain grease were used.

These recommendations apply to chains of motor cycles as well as driving chains of motor cars.

THE PEOPLES BANK, JOHNSTOWN, N. Y.

EDWARD WELLS, President, OLIVER GETMAN, Vice President,
DONALD FRASER, Cashier.

August 25, 1910.

*Joseph Dixon Crucible Company,
Jersey City, N. J.*

GENTLEMEN:—Several years ago I painted my tin roof and shingles with a paint made by your company and I am writing to ask you what it probably was and where can I buy it? I think it was called "Dixon's Graphite."

I shall be glad of any information you care to give us as to what would be best to use again, as this has given perfect satisfaction.

Truly yours,

(Signed) EDWARD WELLS,
c/o PEOPLES BANK.

LUBRICANT FOR LOW TEMPERATURES

Because of the congealing or thickening of the greases customarily used, the oiling of machinery, particularly that used in unwarmed places, is in winter sometimes difficult. Oils thinned with kerosene do not readily thicken or congeal. A combination of cylinder oil, kerosene and graphite will stand a temperature several degrees below zero without losing its capacity for flowing freely. The cylinder oil and graphite should be mixed to the consistency of a thin paste, and this thinned by the addition of kerosene until it flows quite freely.

—*Machinery.*



**THE GUNTHER OFFICE BUILDING,
SAN ANTONIO, TEXAS.**

The above cut is reproduced from photograph showing the Gunther Building of San Antonio, Texas, in course of construction. This will be a modern office building six stories in height. The 470 tons of steel work contained in this building is thoroughly protected with Dixon's Silica-Graphite Paint.

Mauran & Russell and the Westlake Construction Company, both of St. Louis, were respectively the architects and builders for this structure.

GRAPHITE LUBRICATORS

We recently ran an article in GRAPHITE in which we stated that a number of graphite lubricator manufacturers have given up pushing their lubricators because through the use of inferior grades of lubricating graphite the reputation of the lubricator had to suffer, whereupon the Adreon Manufacturing Company sends us the following:

"The use of graphite as an auxiliary lubricant for locomotive valves and cylinders is now receiving more consideration on the part of the mechanical officials of railroads than has been apparent for years, and more especially since the use of superheated steam. It is universally acknowledged that the temperature of the steam at the desired state of superheat is so near to the evaporating point of cylinder oil that very little benefit is derived from the oil, resulting in the locomotive suffering excessive frictional resistance and wear to these surfaces as well as to valve gear throughout, including cylinders, packing,

etc. This condition by necessity has caused mechanical officials to resort to the use of dry flake graphite as an auxiliary lubricant with most favorable results.

"The Campbell Graphite Lubricating System sold by Adreon Manufacturing Company of St. Louis and Chicago, is installed on some 1500 engines on fifty of the most prominent railroads, and in some instances has accomplished a reduction of fully fifty per cent in the usual consumption of cylinder oil, and an elimination of frictional resistance, consequently producing maximum locomotive efficiency and reducing wear and tear on valve gear, cylinders, pistons and packings.

"The Campbell System provides means for projecting a small graduated quantity of flake graphite into the valve chests while the locomotive is drifting with throttle shut off. This method permits of the thousands of little flakes in the charge being distributed over the entire exposed surfaces of valve seats and cylinders, veneering same with an anti-frictional element, consequently establishing a most perfectly lubricated condition."

In this connection it should be noted that the Adreon Manufacturing Company advocate the use of Dixon's Flake Graphite only.

BIG DOINGS IN BERGEN

For the benefit of such readers as may not know what and where Bergen is, we may say that it was the first settlement in New Jersey and is now a part of Jersey City proper. The village of Bergen was founded by the Dutch in 1660 and has just recently celebrated its 250th birthday, the celebration lasting for a week. There were historical exhibits, appropriate services in schools and churches, addresses, receptions, parades and the like, which all go to make up the properly constituted and formally conducted celebration.

Situated as it is across from the Island of Manhattan, Jersey City, which includes Bergen, is naturally the scene of much historical action connected with the early development of the country and the Revolutionary War. In view of this fact, there is considerable material here which inspires the commemoration.

With this issue we are enclosing a Post Card which should be filled in and returned if you desire to receive "Graphite" for 1911.

If you are among those who desire to receive our publication for the coming year, fill in, stamp and mail Post Card—and we will do the rest.

FROM A PROMINENT RAILROAD SIGNAL ENGINEER

OFFICE OF THE CHIEF ENGINEER

Joseph Dixon Crucible Company,

Jersey City, N. J.

GENTLEMEN:—Your letter of May 19th received and I beg to state that we have used your paint for pipe lines and it has given good satisfaction.

Very truly yours,

Supervisor of Signals.

THE LINSEED OIL SITUATION

By C. M. DURBIN

We are very fortunate in being able to reproduce here a recapitulation of the linseed oil market. This has been supplied us by no less an authority than Mr. C. M. Durbin, manager of the linseed oil department of the Sherwin-Williams Company.

Mr. Durbin dispels the impression that the high price of linseed oil is due to manipulation, and explains the natural causes which have resulted in the sharp increase in price. All users of linseed oil products will be interested in this résumé:

The advance in the price of flaxseed, with the consequent advance in the price of linseed oil, has been the subject of much conjecture and discussion, and those not in close touch with conditions have been prone to lay it to manipulation. While there is always more or less speculating in a fluctuating commodity of this character, it can be safely stated that this is not responsible, to any appreciable extent, for existing conditions, neither are they due to any corner or combine.

A conservative estimate of the linseed oil requirements of this country is the equivalent of 25,000,000 bushels of flaxseed per year, and the natural tendency of the demand is towards an increase, but present prices will have a tendency to check this although it is doubtful whether they will result in a material decrease.

Up to two years ago the average production of flaxseed in this country for several years was about 25,000,000 bushels, or sufficient to meet the demands with, at times, a small surplus for export. During the season of 1909, however, there was a big shortage in the crop, notwithstanding the very flattering prospects early in the year, and the total production did not exceed 20,000,000 bushels. After reserving the seedling requirements estimated at 1,500,000 bushels, the amount available for market was about 18,500,000 bushels. This made it necessary for the trade to take not only Canada's surplus estimated at from 1,500,000 to 2,000,000 bushels, but to reach out for the first time to other producing countries for a sufficient quantity to help make up the deficit, and by the end of the crop year nearly 5,000,000 bushels had been imported from India and the Argentine Republic.

This naturally caused sharp advances in prices with the result that the trade was very cautious and only took on a sufficient quantity to meet their actual requirements, and when the year closed every tank in the country was bare of seed and oil. In previous years the production was sufficient to give a stock to carry over from one year to the next, thus maintaining a balance, and it requires very little effort to figure out the results due to wiping out this surplus entirely.

Another effect of the advances of last year was to stimulate the flax grower to increase his acreage and when the statistics this year were compiled, it was found there had been a net increase of from ten to fifteen per cent over the previous year, and the trade felt that, with favorable conditions, this country would produce a sufficient quantity of seed to more than meet the country's oil requirements and restore conditions to something like a normal basis.

Owing to the limited area over which flax is grown to any extent, namely, the Dakotas and Minnesota, there is no crop

so subject to the vagaries of the climate; the seed was no more than in the ground until the worst drought the Northwest has experienced in more than a generation set in. This, together with the hot winds, soon seriously affected the growing plant, and as the season grew conditions became worse. It was manifest long before the harvest season that the total production would be even less than the previous year's short crop, notwithstanding the increase in acreage, and every unfavorable report that came in strengthened the market.

As yet, it is impossible to form an intelligent idea of the volume of seed to be marketed, and estimates run all the way from 9,000,000 to 17,000,000 bushels, but it is safe to say that it will not exceed 16,000,000 to 17,000,000, and may run much lower. Growing conditions in our own Northwest applied to a very great extent in Northwestern Canada, as a result of which the crop this year will exceed but little, if any, that of a year ago.

It is therefore very plain, that if the requirements of this country are at all near normal, we must expect relief to the extent of several million bushels from India and the Argentine. The Indian crop is not as yet in the ground and will not be harvested until next April, while the crop in the Argentine, which is harvested in December, is reported to be seriously damaged by drought in some sections.

The natural market for these two countries is Europe, which is easily able to digest all they produce, and therefore it is impossible to reduce this supply in any way, either by diverting it to other countries or a shortage in the crop, without advancing the market.

In view of these conditions, it is not to be wondered at that prices are high, and the only thing that can restore them to something like their former level is a tremendous curtailment in the demand or a big increase in the supply. The former is out of the question, while the latter is not possible until another year at least.

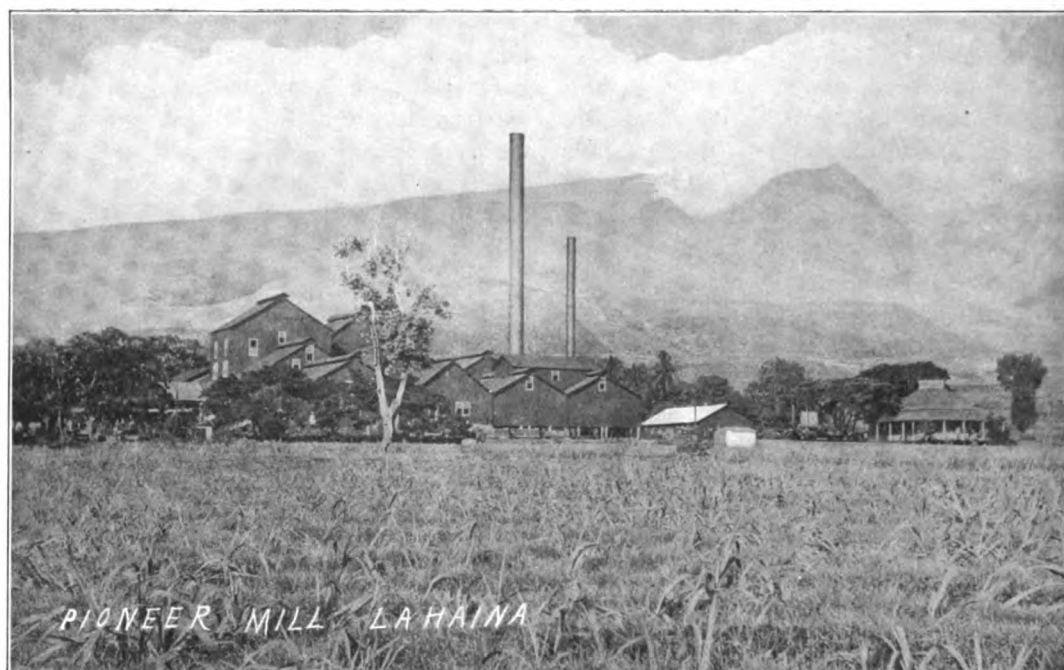
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COMMENTS ON THE USE OF THE PENCIL

In the October issue of GRAPHITE we had a little article on "The Fastidious Use of the Pencil." In the article it was advised that pencils be carried with sharpened point down instead of up. We stated that the reason for such practise was not known to us. Our Mr. Reed, head of the School Department, who knows pencils from A to Z and return, tells us that when the pencil is carried point up, the hand may easily catch upon the point with more or less injury to both point and hand.

We also stated in the same article that the pencil carried point down would not wear a hole in the pocket. This statement needs a certain amount of amendment. If one carries the pencil in a pocket only lightly lined or in a light office coat, the point will wear a hole. Little or no trouble will be experienced, however, if the pencil is carried in the outside breast pocket of the coat.



PIONEER MILL, HAWAII

From our San Francisco office we received a post card showing the view herewith reproduced. Hawaii is a good ways off, but Dixon's Silica-Graphite Paint offers the same degree of protection there as it does here.

We feel that nothing can speak more emphatically for Dixon's Paint than the laconic testimonial which our customer himself wrote. It runs as follows:

"These stacks were painted six years ago with Dixon's Silica-Graphite Paint. Climate—heat, wind and rain. Enough said. No argument necessary."

FLAKE GRAPHITE VS. AMORPHOUS GRAPHITE

Testimony from the Field

We have published in GRAPHITE from time to time various testimonials in reference to the dangerous practise of using inferior grades of lubricating graphite, and it is with much pleasure that we are permitted to reproduce the following letters from Mr. J. F. Brothers, Minot, N. D.

MINOT, N. D.

Joseph Dixon Crucible Company,

Jersey City, N. J.

GENTLEMEN:—I gladly grant you permission to reproduce my letter of sometime ago relative to the merits of your graphite. Please send me No. 1 flake for money enclosed.

I do not intend to be without it in future. Rod bearings that formerly ran hot are now running O. K. Cups that I had to fill with soap and graphite furnished at every shop, now run over the division with one filling, and at the end of the run they are good to look at, as they are generally well filled with grease that could not be kept there without the use of your graphite. Have tried it on the driving boxes with the same satisfactory result, which has many times repaid me for my trouble and money expended.

Yours truly,

(Signed) J. F. BROTHERS.

MINOT, N. D., August 4, 1910.

Joseph Dixon Crucible Company,

Jersey City, N. J.

GENTLEMEN:—Enclosed find post-office order for one dollar (\$1.00), for which you will please send me some of your flake graphite. I have a new engine on a fast freight run and main pins and driving boxes are inclined to run hot. I intend to mix the flake graphite with the cellar grease as an experiment; will also use it on valves and in cylinders. I am using super-heated steam, which requires or necessitates something more substantial than common valve oil, to withstand its temperature.

I am a firm believer in graphite. Use lots of it, but as we get the fine, cheaper kind which balls up, the result is not so satisfactory as that obtained through the use of the Dixon Flake. Some years hence, I believe the use of the flake will become more popular, as yet few realize its quality as a lubricant; most engineers refuse to buy it and it is seldom furnished by the company. My engine is new and I intend to demonstrate just what graphite will do to keep an engine out of the shop.

Please send me literature covering history of graphite. I have your journal for June, which is very interesting. Literature of this kind is kept in the club room for the benefit of those who are troubled with hot pins.

Yours truly,

(Signed) J. F. BROTHERS.

With this issue we are enclosing a Post Card which should be filled in and returned if you desire to receive "Graphite" for 1911.

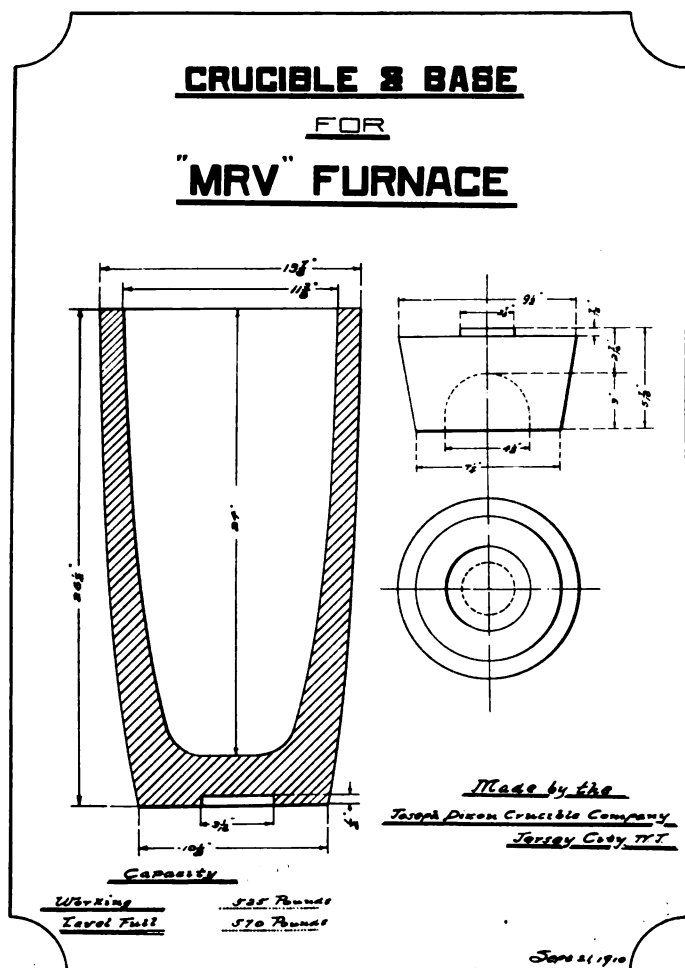
If you are among those who desire to receive our publication for the coming year, fill in, stamp and mail Post Card—and we will do the rest.

McMANUS says: "The opinion of the man who may never buy often guides the man who buys."—*The Practical Printer.*

"M. R. V." CRUCIBLE AND BASE

Something like a year ago, a new brass melting furnace made its appearance in this country. It originated in England, is known as the "M. R. V." Furnace and is a coke fired, low blast, tilting furnace.

The introducers of this furnace brought with it crucibles, also made in England, which were quite different in a way from the crucibles usually made in this country. They appear to allow the heat to pass through more readily, so that the metal is melted in appreciably less time. The construction of this crucible renders it unfit for use in furnaces where it is pulled by means of tongs, as it is deficient in tensile strength, and in the furnace it needs the support which is given by the coke surrounding it.



While the Dixon Company is the oldest graphite crucible manufacturer in the world, we make it a point to keep in close touch with the field, and in addition to the regular style of crucibles used in the usual form of furnace, we make special crucibles designed for standard furnaces of various types.

After the introduction of the "M. R. V." Furnace, we went to work on a suitable crucible for this furnace and have succeeded in producing one that readily admits of the transference of heat. These crucibles have been tried with very good satisfaction at numerous plants, particularly good runs having been secured by the Nathan Manufacturing Company of New York City. Cut occurring above shows the dimensions and shape of the crucible, also the base used with it.

Orders from users of the "M. R. V." will have our prompt attention.

THE PAY-AS-YOU-ENTER CAR

We see a little article in the September issue of *Beach's Magazine*, which has to do with the pay-as-you-enter cars. Presumably there is nothing to do but to put up with this new form of traffic carrier. It is in almost every way the logical car and its advantages are many. On the other hand, we can easily appreciate the situation as described by the article above mentioned, especially in view of the "cattle-car" effect which we have in our home town in the form of wire netting gates—locking you in or out.

The article in *Beach's Magazine* treats of the formidable number of rules that obtain with the new car, some of which are as follows:

PAY HERE!

HAVE YOUR FARE READY!

PASSENGERS NOT ALLOWED ON PLATFORMS!

PUT EXACT FARE IN BOX. CONDUCTOR NOT PERMITTED TO DO SO!

HAND TRANSFERS UNFOLDED TO CONDUCTOR!

LEAVE BY FRONT DOOR!

PLEASE MOVE TO FRONT OF CAR IN ORDER THAT ENTRANCE AND REAR EXIT MAY BE CLOSED!

DO NOT OPEN DOOR UNTIL CAR STOPS!

NO SMOKING!

THIS WAY OUT!

PASSENGERS MUST NOT SPIT ON THE FLOOR!—and there are others.

On rules the modern pay-as-you-enter has the parliamentary manual beat to the next corner.

MRS. ALICE W. MORTON,
BOOKSELLER AND STATIONER,
2817 Washington Ave.,
NEWPORT NEWS, VA., September 1, 1910.

Joseph Dixon Crucible Company,
Jersey City, N. J.

GENTLEMEN:—Referring to your "strips," showing the uses to which lead pencils are put, I would like to tell you that after reading an article in your valuable little paper about blowing the dust of a lead pencil through a keyhole to doctor it up, it occurred to me that I would grind up a pencil and use it together with a little oil, to remove a most horrible, nerve-racking "squeak" in a large post card rack in my store. It worked like a charm and not a sound has been heard from the old rack since. I had numerous mechanics to look at it, but the "squeak" has been going on daily for over eight years, to be overcome at last by a humble, little Dixon pencil.

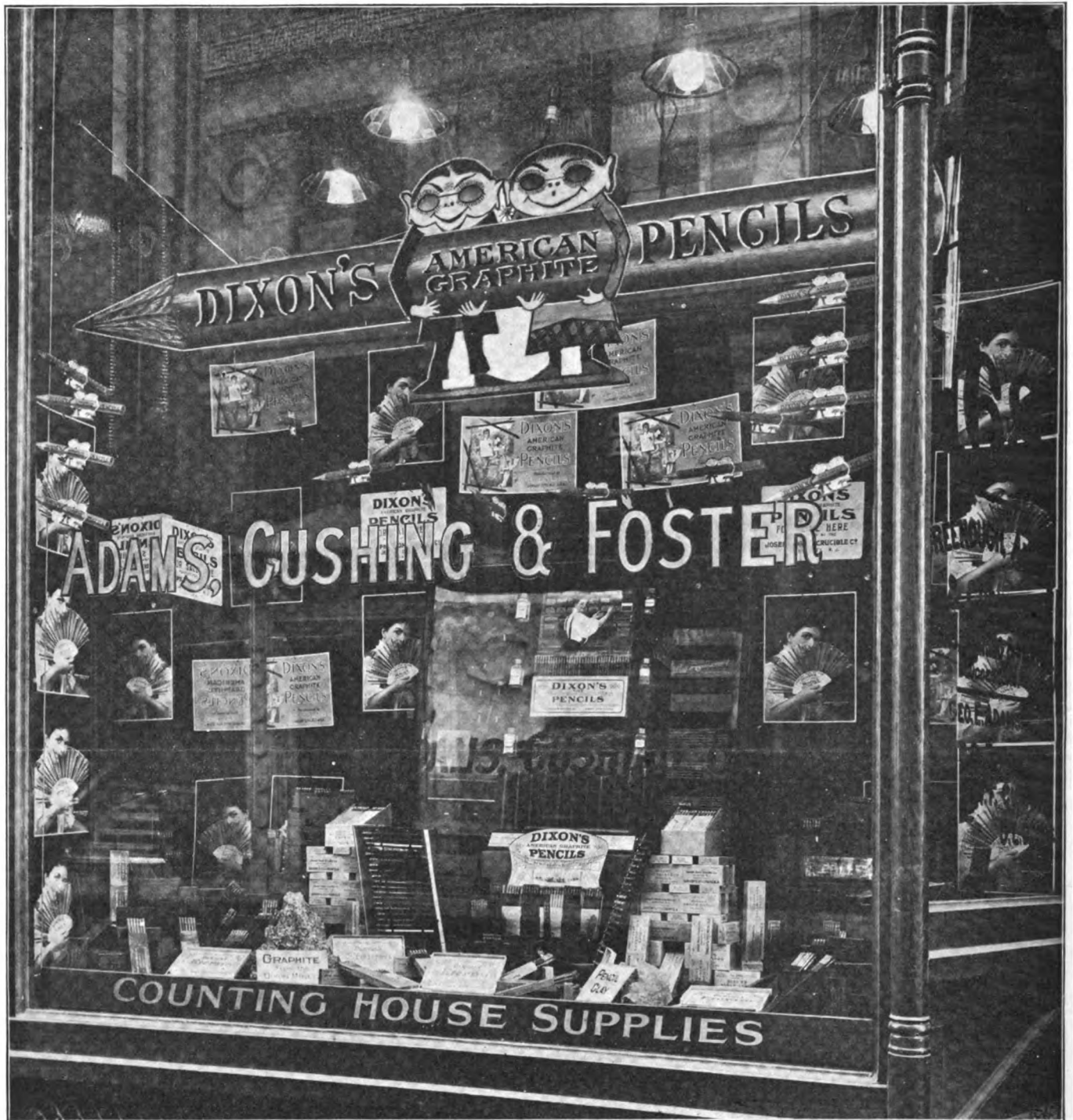
Yours very truly,

(Signed) ALICE W. MORTON.

NOT CANNIBALS; JUST PENNSYLVANIA DUTCH

We were walking along the shaded street of an eastern Pennsylvania village, when a girl came to the door of a nearby house and called to a small boy playing on the walk:

"Gusty, Gusty, come and eat yourself once. Ma's on der table now and pa's half et already!"—*The Housekeeper*.



AN ATTRACTIVE DISPLAY OF DIXON'S PENCILS

The accompanying illustration shows a display, which is now attracting considerable attention, of Dixon's Pencils in one of the windows of Adams, Cushing & Foster, one of New England's oldest and largest stationery houses.

The large Dixon Brownie Pencil sign, with eyes electrically lighted and pencils in various stages of construction, showing in an interesting manner the making of a lead pencil, are special features.

Grouped about these are assortment boxes, including Dixon's Aeroplane Assortment, artistic Dixon posters, together with Dixon Pencils of various styles and grades.

Graphite ore from the Dixon mines and cedar from the Dixon mills is also shown.

The display was arranged through the Boston office of the Joseph Dixon Crucible Company.

FINDS DIXON'S TRIPLE VALVE GREASE VALUABLE

Our Atlanta office advises us that they have received the following communication from the master car builder of one of the prominent Southern railroads:

"I beg to acknowledge receipt of yours of July 22, also two pounds Dixon's Air Brake and Triple Valve Grease, which I have tried and find very satisfactory. I have issued instructions to all master mechanics to use this material in the future."

TIGHT JOINTS WITH DIXON'S GRAPHITE COMPOUND

A Steam Fitter Finds That Dixon's Pipe Joint Compound Solves His Difficulties

We have two letters from an enterprising steam fitter with reference to some pipe fitting problems. The first situation was provided by a job on which white lead had been used, but the joints were not tight. When the steam fitter went in to fix up the job, the president told him not to start upon it if he could not stop the leaks. The proper use of Dixon's Pipe Joint Compound, however, met conditions fully, and though the steam pressure is eighty pounds, no leaks developed. The same writer that supplied us with the above instance, tells us of an instance of his going over some 1400 feet of 1¼" gas pipe on which he used 1½ pounds of Dixon's Pipe Joint Compound. In his letter he says: "I put on a mercury gauge and pumped it up to fifteen pounds and it never moved ¼ of an inch."

The success of Dixon's Graphite Pipe Joint Compound is due to the fact that it is a lubricating mixture rather than a cement. Red and white lead retard the making of tight joints by greatly increasing the friction of the screw threads one upon the other. Graphite performs the opposite function of reducing friction and enables the pipe fitter to make the connection tighter by a turn or more than would have been possible if white or red lead had been used. In addition to its first value in making tight joints, Dixon's Pipe Joint Compound has a further value should it become necessary to disconnect fittings. When Dixon's is used, joints may easily be unmade after any length of time without damage to tools or fittings.

GRAPHITE BABBITT-METAL

EDITOR:—I was quite amused to read in the June issue of *The Brass World*, page 207, the description of a material in the form of babbitt containing graphite, and which it is stated originated in Germany. In connection therewith it may be of interest to your readers to know that some six or seven years ago I produced this material and made an application for a patent upon it, but found that in the Patent Office an earlier patent was so broadly worded that it covered this same idea. This patent was so broad in its wording that it covered the introduction of graphite into the metal by subjecting the mixed particles thereof to pressure, but it did not make any mention of how the graphite was incorporated with the metal in the first place. Nevertheless, without pressure, the process is of no value.

In the material that I formerly made, I pursued precisely the same method as outlined in the aforesaid article, i. e., by mixing graphite with the metal while in the plastic condition. I have experimented with quite a number of alloys which contain a eutectic mixture, and also have tried "Plastic Bronze," but in the latter case was not very successful although I succeeded well with soft metal mixtures. The difficulty which I found with the mixtures of babbitt-metals and graphite, however, was that they were not sufficiently strong. This was probably due to the use of too great a quantity of graphite.

G. H. CLAMER, The Ajax Metal Co., Philadelphia, Pa.

—From *The Brass World*.

MASTER CAR AND LOCOMOTIVE PAINTERS' CONVENTION

The annual convention of the Master Car and Locomotive Painters' Association was held this year at the Southern Hotel, St. Louis, Mo., from September 12 to 17. The convention was a success in every way, and all the Dixon representatives present are enthusiastic in their reports of it. H. A. Vanderslice and C. D. McIntosh of the St. Louis office, E. R. Smith, of the Chicago office, and H. W. Chase of the home office represented the Dixon Company at the convention.

The Dixon Company secured an individual reception room on the parlor floor of the Southern Hotel and was thus able to extend their hospitality to the convention delegates.

We were especially pleased with the nice things that the Master Car and Locomotive Painters had to say about the various Dixon Products. Dixon's Engine Front Finish was the object of particularly favorable comment. Many stated that they had found it to endure five times as long as the material they had previously used and had entirely dispensed with the troublesome fumes. So the reports came in; some mentioning our crucibles, some our lubricants, others our paint, etc.

As one of the Dixon managers has said, "Conventions are great things," and the Master Car and Locomotive Painters' Convention recently closed proved to be no exception to the rule.

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If you are among those who desire to receive our publication for the coming year, fill in, stamp and mail Post Card—and we will do the rest.

WHAT IS THE ANSWER, QUICK?

Many of us may remember back to the days of our intellectual arithmetic when John Jones bought thirteen and a half gallons of gasoline at twenty cents a quart and had \$16.33 left in his pocket when he got home.

We present here four little problems that are more tricky than difficult. Can you give us the answer, quick?

$\frac{1}{2}=?$ $\frac{1}{3}=?$ $\frac{2}{3}=?$ $\frac{1}{4}=?$

LIKES DIXON'S GRAPHITE IN BOTH FORMS

PHILA., PA., June 10, 1910.

Joseph Dixon Crucible Company.

GENTLEMEN:—Received your valuable paper GRAPHITE, and am much obliged for it. I look for it monthly. I follow the directions for using graphite and realize how much easier the work can be done. January of this year I began with a spoonful of flake graphite to one quart of cylinder oil. I use three quarts of —————oil daily. Graphite is fine and makes every part of the engine work easier. I use it in the air compressor with good results. I am sure it saves coal and oil. All information will be thankfully received, as I am willing to learn and will always keep graphite on hand.

Yours truly,

(Signed) PETER M. BARRETT, Chief Eng.,
2405 E. Huntington Street, Phila., Pa.



Dixon's

American Graphite

Pencils



POLITICS AND PENCILS

Now is the time that political furor reigns. People talk politics, newspapers print politics, and banners proclaim politics.

But real life must go on as before and the final victory is to the efficient.

And this is where Dixon's American Graphite Pencils enter. Dixon produces pencils for particular purposes with a view toward increasing efficiency—your efficiency.

Pencils, besides being good or bad, are adaptable or unadaptable. The "Dixon Pencil Guide," sent free on request, will tell you how to combine the good and adaptable in one pencil.

Joseph Dixon Crucible Co.
Jersey City, N. J.

DIXON'S ANGLO-SAXON No. 2 - No. 1806

DIXON'S AMERICAN GRAPHITE ELDERADO - F - 176

GRAPHITE

VOL. XII.

DECEMBER, 1910.

No. 12.

Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.



To all our readers and friends we wish a

MERRY CHRISTMAS
and
HAPPY NEW YEAR.

A CHRISTMAS DICTIONARY

Santa Claus.—An elderly gentleman with Sheik Ilderim whiskers and Taftian smile, who acts as distributing agent for the Nuremburg toy manufacturers, the gift-book publishers and the bonbon industry about the twenty-fifth of December. Has shaggy, Father Time eyebrows, that often cause him to overlook the ultimate consumer.

Kriss Kringle.—Same as Santa Claus. Used in Minneapolis, Stockholm and other Scandinavian cities.

North Pole.—Formerly the home of Santa Claus. Was compelled to vacate not long ago on account of the heat generated by the claims of rival explorers.

Christmas Gifts.—Any article presented to a friend, enemy or innocent bystander on the twenty-fifth of December. Gifts generally consist of something which the giver himself covets but which the donee would not put in his or her dog house—*e. g.*, a husband presents his wife with a picture of a bulldog or the wife gives the husband a set of Bertha M. Clay.

Christmas Books.—Slim, square, gilt-top volumes containing fifteen cents' worth of reading matter and \$3.75 worth of marginal illustrations, consisting mainly of linked hearts, sleighbells, cupids, arrows and love-knots.

Stockings.—Certain articles of black, blue, white or fancy silk, usually suspended near the chimney on the night of

December twenty-fourth, and used as a receptacle for wooden elephants, peppermint canes, Whitcomb Riley poetry books, Brazilian diamonds, Battenberg lace things, silver lockets, rabbit's foot garters, violet water, etc., etc., etc., and then some. After Christmas they are emptied of their contents and not again exhibited until the next rainy day.

Good Cheer.—A state of feeling induced by the taking of one silver fizz, one golden fizz, a couple of Manhattans, three installments of egg nog, a dash of Bourbon, a little horse collar and as many Mamie Taylors as desired. Add extra dry to suit the taste.

Lamppost.—An upright fixture erected at street corners for the purpose of supporting the good cheer.

Wassail Bout.—A combination jamboree, big toot, whizz, Seeley Dinner and Belshazzar revel formerly indulged in at Christmas times. Now restricted to reunions of old college chums and the expirations of New Year resolution periods.

Festal Board.—A long table groaning under a weight of celery, cranberry sauce, oysters, capons, turkeys, plum pudding and other articles too filling to mention, around which the minister, Sylvia's admirer from Philadelphia, Cousin Bill from the West and first and second cousins to fill in congregate. Formerly used as a place to sleep under after the wassail bout.

Turkey.—A fowl that gets most of his Christmas in the neck.

—*Life.*

ESTABLISHED 1827.



INCORPORATED 1868.



JOSEPH DIXON CRUCIBLE CO.

JERSEY CITY, N. J., U. S. A.

Miners, Importers and Manufacturers of Graphite,
Plumbago, Black Lead.

OFFICERS:

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Vice Pres. & Counsel—WILLIAM H. CORBIN
Treasurer—GEORGE E. LONG
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OFFICES AND SALESROOMS:

NEW YORK SALESROOM, 68 Reade Street.
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BALTIMORE OFFICE, 1005 Union Trust Building.
BUFFALO OFFICE, 72 Erie County Savings Bank Building.
ATLANTA OFFICE, Fourth National Bank Building.

EUROPEAN AGENTS,

Graphite Products, Ltd., 218-220 Queen's Road, Battersea, London.

WHAT THE WORLD EATS AT YULETIDE

We all know the old story of Jack Spratt and his wife. Well, Jack is not yet dead, as the different favorite dishes of the different nations indicate. Turkey and cranberry sauce are quite distinctly American, the *Scrap Book* tells us. The Englishman still prefers plum puddings and roast "joint." The Frenchman's menu is said to be more extensive and varied. Black pudding or boudin is the national standard and the Frenchman partakes of it heartily on Christmas Eve. Strassburg pie, which consists of truffles and slices of fattened geese livers, boar's-head jelly stuffed with pistachios; oysters, lobsters, crayfish and edible snails—Burgundy supplies the best of the snails.

Wheat-porridge with honey and a compound of stewed

pears, apples, oranges, grapes and cherries sweetened with honey and served cold, are the two favorite Christmas dishes of the Russians. These are washed down with liberal draughts of Bodka. Before the meal begins, a spoonful of porridge is thrown against the ceiling, the fortune for the coming year being determined by the quantity that sticks there.

The Austrian delicacy is fruchtbrod, which is made of raisins, currants, figs and chopped dates. Cakes made of poppy-seed or ground nuts are also in order. The national meal served on Christmas Eve consists of soup, carp chopped and baked, boiled beef and vegetables and Vienna pudding.

Various kinds of cakes described as sweet and indigestible are favorites in Italy, and the Christmas Eve supper is one of eels and periwinkles and vermicelli.

The Germans favor carp cooked in beer and mohnpielen, a dish composed of white bread, almonds, raisins and poppy seed stewed in milk. The popular delicacy is the marzipan tart. Also honey cakes of Brunswick, the Dresden stollen and the rich Nuremberg ginger-cakes.

HAVE YOU "SUBSCRIBED" FOR 1911 "GRAPHITE?"

Unless you have returned to us Post Card enclosed with our November issue, or notified us in some other way, you will not receive GRAPHITE for 1911.

We shall be glad to send you GRAPHITE if you want it and so supply this final warning against your missing any copies of our publication, providing you desire to continue to receive them.

MR. TUCKER WAS THERE

In our November issue of GRAPHITE we included a little item on the Master Car and Locomotive Painters' Convention. In mentioning the Dixon representatives present at the convention, we inadvertently left out Mr. J. J. Tucker, who was at the convention and had his shoulder at all times against the wheel—and when Mr. Tucker puts his shoulder to anything, it moves, take it from us. We do not feel, however, that an apology is due Mr. Tucker for our omission, since his work always speaks for itself and is considerably above our power to add to or detract from.

OUR NEW BOOKLET FOR RAILROAD MEN

We have just gotten out quite an attractive booklet of some forty pages which is devoted entirely to Dixon's line of products for railroads. This will be of interest to all those engaged in mechanical departments of the railroad and we shall be glad to send a copy of this booklet to any who may be interested. The title of the booklet is, "Graphite Products for the Railroad."

This is an extract from a Siamese paper that has an English column for foreign readers: "Shooting Outrage—O Fearful Agony.—Khoo Tong was a man of Langoon and on his return accidentally shot at by some miscreant scoundrels. Untimely death, oh fearful! All men expressed their mourn. The cowardice dogs is still at large."—*Everybody's*.

THE SAME OLD STORY

LAUNCESTON, Tasmania, Australia, July 8, 1910.

DEAR SIR:—You will no doubt be pleased with the following:

We have a twenty horsepower steam engine, ten inch diameter cylinder and twenty-four inch stroke. It has been either scored or has a soft place the full length of the cylinder, about three inches wide and $\frac{3}{4}$ inch deep. We filled the space up with a little oil and flake graphite a week ago. Took off the end today and find the stopping still there. We also shut the drain cock at other end, spragged the fly-wheel and turned on steam at fifty pounds pressure, when there was scarcely any leak.

At first, when we found the bad place, our man suggested graphite, and we thought to give it a trial. Were making preparations to rebore the cylinder and make a new piston costing us about twelve £, but now I am thankful to say it does not need to be done. We lost plenty of steam before the experiment and we reckon it a triumph for flake graphite.

Yours truly,

P. S.—Thanks for the copies of GRAPHITE that you send us from time to time.

LUBRICANT CHARACTERISTICS

PART I

The object of lubrication is to overcome one of the fundamental principles of nature, friction. It has been realized for ages by scientists that if they could obtain surfaces absolutely without friction or resistance of any kind, they would have obtained a much desired goal, perpetual motion. However, they have approached this condition by means of a partial vacuum, highly polished bearings, journals of the knife blade order and perfected lubrication; in watches and delicate instruments of precision, jewel bearings are used to great advantage.

The lubricant should form an undecomposing layer between moving and stationary parts, should have the least internal friction (due to the moving about of particles of which the lubricant is made up), and should keep the surfaces away from each other. As minute irregularities exist more or less in metal surfaces, the question of lubrication, therefore, resolves itself into getting something that will hold the parts away from each other and prevent their being in contact. By many it is thought that the only thing that will meet this requirement is a fluid.

FRICTION OF LUBRICANT

Where a fluid is used, there are two kinds of friction to be dealt with: A—friction of the parts, B—friction of the fluid or internal friction. A, the first kind of friction, exists where the lubricant is unstable or works away from the rubbing parts, that is, allowing the metal surfaces to get into actual contact. The amount of this type of friction depends upon the kind of metals which are in contact and it is much greater than the internal friction of the lubricant.

The friction of the fluid, B, is caused by either one of the two conditions; that is, the fluid is made up of small minute globules approaching irregular-shaped balls, or else of minute films, which are constantly sliding over each other, and when

the oil is in rapid motion, such as the intervening film between a bearing and journal, the part which is immediately in contact with the bearing is at rest, while the part between and touching the shaft is in rapid motion.

VISCOSITY A FACTOR

The co-efficient of friction of the lubricant itself is generally expressed by its viscosity, which means its rate of flow. This is determined by noting the length of time which it takes a certain amount of pure water at a given temperature to pass through a small orifice, compared with the length of time required for the same amount of oil to pass through the same orifice at the same temperature. It is the consistency of the lubricant at working conditions which determines just how much this fluid friction is.

REQUIREMENTS OF A LUBRICANT

First, it must have sufficient body to prevent seizing of the parts with a minimum of co-efficient of friction.

Second, must not gum, dry or be injurious to the parts lubricated.

Third, the character of the work demands that, within certain limits, the lubricant must not vaporize or stiffen.

Fourth, must be free from acids, alkalies or other injurious agencies.

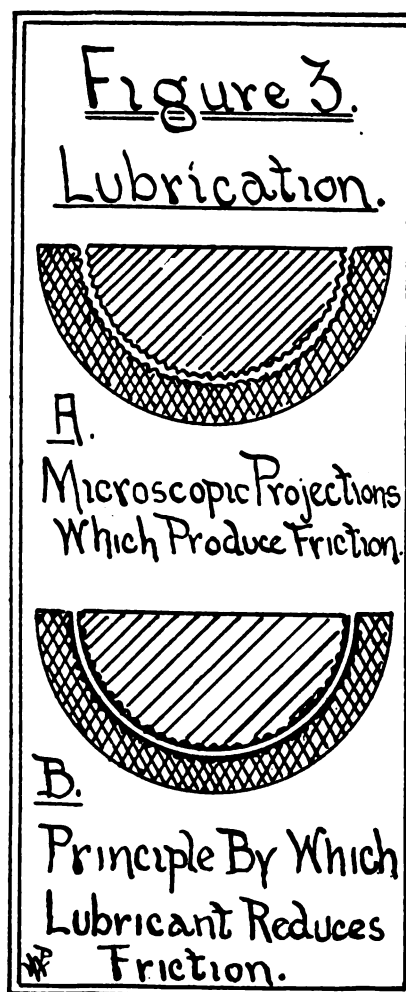
Fifth, must be carefully selected for the particular work required.

Sixth, must be a good conductor of heat.

Figure No 3—A shows a cross sectional view of the bearing surfaces and how the irregularities would show under the microscope. No. 3—B shows how microscopic irregularities are smoothed out by the application of flake graphite and cutting edges and points rendered harmless.

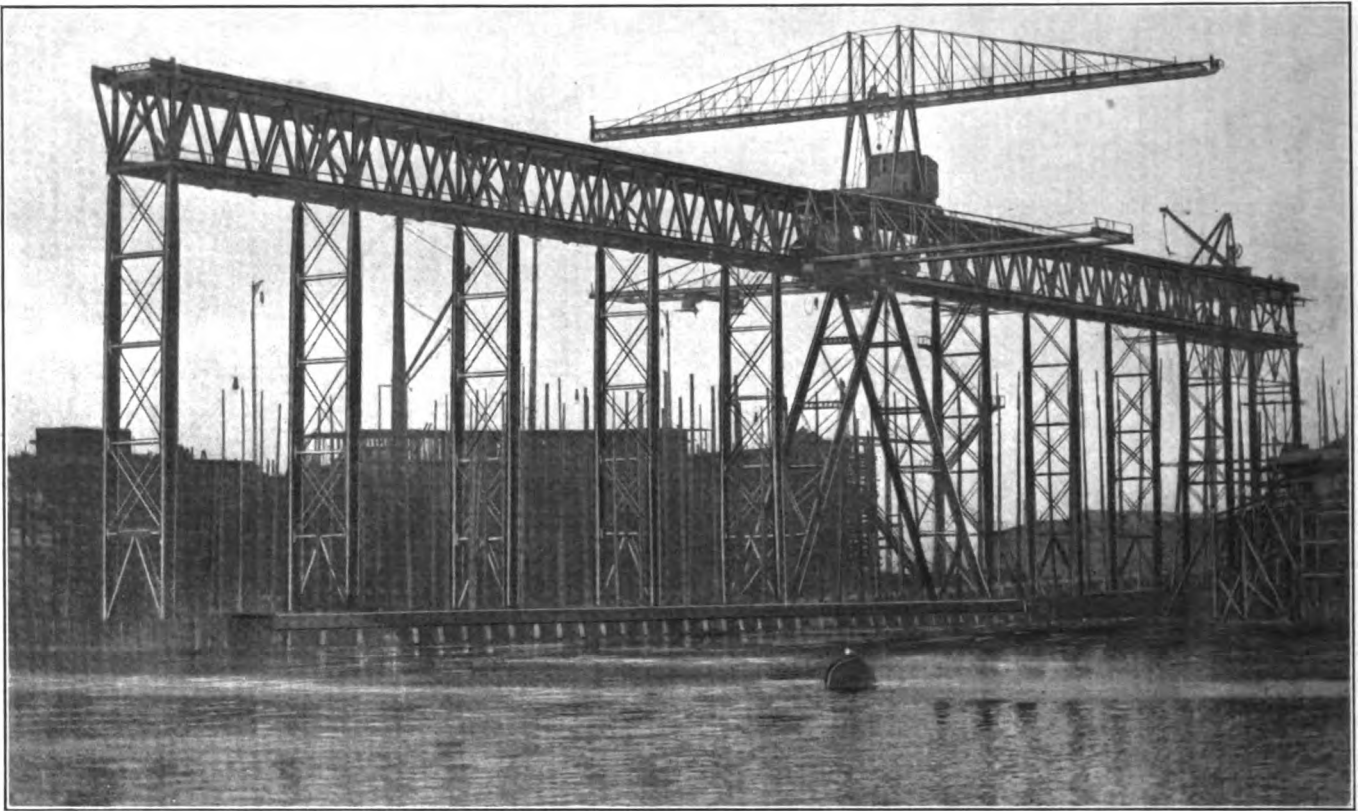
As before stated, the object of a perfect lubricant is one which will perfectly separate these surfaces and at the same time has the minimum co-efficient of friction in itself.

This next leads to the different kinds of lubricants, and they may be completely grouped into three classes: fluid, semi-fluid and solid.



Reproduced through courtesy of
New England Automobile Journal.

(To be Continued).



Gantry and Cranes Built by Brown Hoisting Machinery Company. Protected with Dixon's Silica-Graphite Paint

GANTRY AND CRANES BUILT BY THE BROWN HOISTING MACHINERY COMPANY

Protected With Dixon's Silica-Graphite Paint

The above photograph shows gantry and cranes designed and built by The Brown Hoisting Machinery Company for a European customer. The experience related in their letter proves the tenacity of Dixon's Silica-Graphite Paint—one of the secrets of the success of our paint. We quote the letter which was sent to our European Agents, Graphite Products, Limited, London:

European Office,

THE BROWN HOISTING MACHINERY COMPANY,

39 Victoria Street, London, S. W.

Graphite Products, Limited,

218 Queen's Road, Battersea,

London, S. W., England.

DEAR SIR:—We enclose herewith photograph of gantry and cranes our Company designed and built for Messrs. _____ Shipyard, at _____. All of this material was originally painted with two coats of your graphite paint, and in this connection I may say, that due to a misunderstanding, the pieces forming the tracks for the side cranes were also painted, thereby practically reducing to a minimum the tractive force of the machines, and it cost us nearly one hundred £ to take the stuff off of the track surface, so that we could get the cranes to work at all. This trouble was not due to any fault of the paint, however, but simply went to show that where it was put on it stuck as though it was intended to stay forever.

Yours faithfully,

THE BROWN HOISTING MACHINERY COMPANY,

By ED. L. LEEDS, European Manager.

BELTS AND DRESSINGS

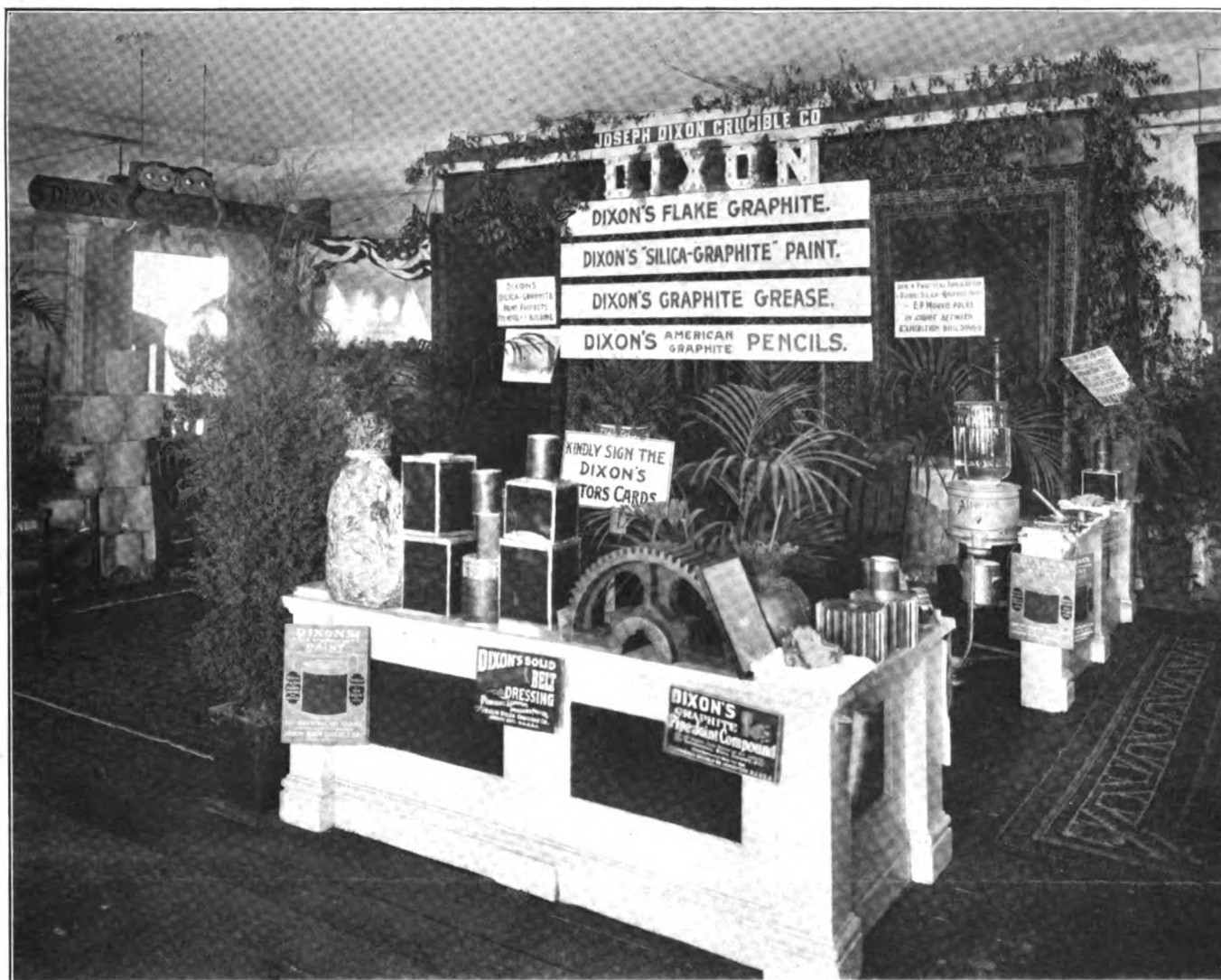
We noticed a little article in a recent issue of *Power House* on the subject of belts and proper dressings. In this article the writer refers to the use of castor oil and recommends it as the best dressing he has ever tried. The particular feature that the writer emphasizes is the ability of castor oil to impregnate the fibres of the belt proper, thus softening it and increasing its clinging powers.

A good belt dressing must necessarily penetrate the belt in order to properly "feed" it. A dressing that merely stays on the surface is an immediate remedy only and does not assist the belt in permanently carrying its load. There is one objection, however, to castor oil that has been pointed out by experts who have made a study of the question, and that is the fact that castor oil and practically all animal oils, contains active acid principles which tend eventually to take the "life" out of the leather, causing it to become flabby and lose strength.

Dixon's Traction Belt Dressing is just as efficient as castor oil as far as penetration of the leather is concerned. Unlike castor oil, it does not contain any acid principles which cause the belt to deteriorate. We use it ourselves on belting throughout our own factory and recently made a record of eighteen years constant running of the belts in one of our shops, without even finding it necessary to tighten them throughout this period. This we believe is a pretty good record for a belt dressing and gives a true basis for our confidence in it.

Dixon's Traction Belt Dressing comes in semi-paste form and is applied with a brush while the belt is running. Where belt efficiency is the chief consideration, it is the very best thing to use.

DIXON'S graphite publications sent free upon request.



Dixon Booth at Atlantic City Street Railway Convention

AMERICAN STREET AND INTERURBAN RAILWAY CONVENTION

As has been our practise for a number of years back, we attended the recent convention of the American Street and Interurban Railway Association held at Atlantic City. The Dixon representatives report the usual good convention and were particularly pleased with the expression of interest shown in the various Dixon products applicable to the street railway field.

The Dixon booth contained a number of interesting industrial exhibits; among these was a set of gears removed from a car that had covered over 200,000 miles. These gears had been lubricated with Dixon's Graphite Wood Grease, and the long service to which they had been put, together with their good condition, proved the lubricating efficiency of this Dixon product.

We also had on exhibit a belt that had been running constantly in one of the Dixon factories for over twenty years. During all this time, nothing had been used on the belt except Dixon's Traction Belt Dressing. The belt was in excellent condition and could easily be used for a much longer time.

Among the visitors to the Dixon booth were engineers from England, South America and Japan, which indicates the breadth of interest the convention holds. There were

also represented a number of companies of a general industrial nature.

The Dixon representatives who were at the convention all or a part of the time included: J. J. Tucker, J. M. Willitts, R. R. Belville and Herman Price of the Philadelphia office; C. D. McIntosh of the St. Louis office; J. A. Condit of the Buffalo office and H. W. Chase, Malcolm McNaughton and L. H. Snyder of the home office.

YOU WILL FIND DIXON'S WHEREVER YOU GO

One of Dixon's friends was recently on a hunting expedition up in the backwoods of Nova Scotia, in the neighborhood of Sheet Harbor. While going through the woods the hunter came across a deserted log cabin, and upon examining it, found a Dixon Anglo-Saxon Pencil sticking between the logs. It was impossible to judge how long it had been there, but it must have been through the winter, and yet the rubber was in fairly good condition considering the exposure it had withstood.

Wherever you go you will find Dixon's Pencils—and it is not improbable that you will carry a few of the pencils along with you.

DIXON'S graphite publications sent free upon request.



GOOD RECORDS FOR DIXON'S CRUCIBLES

The picture shown above was taken in the Buffalo & Susquehanna Railroad Shops at Galetton, Pa. They had been using another make of crucible which cost them less but from which they secured an average of only six heats. With the Dixon Crucibles they are getting from forty heats up, as is indicated by a portion of their letter which we reproduce here-with:

"In regard to crucibles, would say we have a No. 30 that has made eighty-one heats, 5640 pounds of castings, and a No. 100 that has made forty heats, 10,050 pounds of castings. You can have both of these Dixon Crucibles if you so-wish.

"The enclosed picture shows the foundry foreman, Mr. M. A. Rippel, in the act of pouring the fortieth heat from a No. 100 Dixon Crucible, and he says there is none so good as the Dixon."

SEVENTEEN YEARS ON A STEEL ROOF

What Dixon's Silica-Graphite Paint Has Done and Can Do

We are in receipt of a letter from our Mr. J. A. Condit, manager of the Dixon office at Buffalo, telling of seventeen years continuous protective service given by Dixon's Silica-Graphite Paint. The paint was applied to the steel roof on the residence of Mr. D. M. Burgess, Syracuse, New York, in 1893, and the letter states that the roof is still (September 1910) in fairly good condition, only showing some rust spots in a few places. Mr. Burgess repainted the roof this fall and naturally selected Dixon's Silica-Graphite Paint for the purpose.

As is obviously the case, a paint can render protection to a surface only in proportion to its ability to retain its own integrity. This is another one of the innumerable instances of Dixon's Silica-Graphite Paint's protective ability.

DIXON'S SPECIAL WATERPROOF GREASE FOR THE LUBRICATION OF ROLL NECKS

The following is a report made by one of our representatives in regard to the use of Dixon's Special Graphite Waterproof Grease in connection with the lubrication of roll necks in a large steel plant. As usual in such cases, we leave all names blank.

Mr. _____, storekeeper, informs me that Dixon's Special Waterproof Grease is giving the best satisfaction and that another order has been placed, this time for twenty barrels. I suppose you have received it ere this.

Mr. _____, Superintendent of several mills, is away on his vacation, but I learned at his office that they were now using Special Waterproof Grease on _____ mill and expect to extend its use to _____ mill also.

Mr. _____, Mechanical Superintendent, is very well pleased with Dixon's Special Waterproof Grease and also interested in use of graphite in gas engine cylinders. Says he is using some graphite in engines now and is trying to devise a better way to feed same.

Mr. _____, Assistant M. M., says every one about the mills is for Dixon's. The cost of maintenance is far below former cost.

Mr. _____, Superintendent _____ Mill, is very well pleased with Dixon's Special Waterproof Grease and informed me that their bearing repair cost is being held way down by the use of the Dixon Grease.

A SELF-ILLUMINATING PENCIL

We read in the *Illustrated London News* that a self-illuminating pencil for writing in the dark has just been gotten out. This appears to be a combination pencil with an electric



flash light and is described as a great boon to dramatic critics writing at a play, doctors making out prescriptions in dark sick rooms, reports at nocturnal functions and all others who find occasion to write where no light is available.

We show herewith an illustration of the pencil.

CHRISTMAS trees are almost unheard of in Spain and the small folk receive their toys and presents on Twelfth-night instead of on Christmas night; but neither night, so far as giving and receiving remembrances is concerned, has the same significance as in the United States, for instance.



Group Picture Taken at Railway Signal Association's Convention

RAILWAY SIGNAL ASSOCIATION'S CONVENTION

The above picture shows a group taken at the Railway Signal Association's Convention, held during the week of October 10th, at the Jefferson Hotel, Richmond, Va. Our Mr. H. W. Chase, who was the Dixon representative in attendance at the convention, reports a very successful meeting with most satisfactory results.

Among the particularly impressive features were the hospitality extended by the management of The Jefferson Hotel, who cheerfully did all in their power for the comfort of their guests, and certainly the Entertainment Committee were more than successful in providing lots of enjoyment for all. Included in the Entertainment Committee's program were automobile rides for the ladies, a banquet at The Jefferson Hotel, a baseball game between the Signal Engineers of the West and the Engineers of the East, also a most enjoyable clambake and finally a most delightful trip to Old Point Comfort.

So pleased were all with the 1910 Convention, that there was an evident sentiment in favor of holding the 1912 Convention at Richmond. The 1911 meeting will be held, however, at Colorado Springs.

Mr. H. W. Chase found that Dixon's Graphite Products are in their usual good favor and increasing demand by the Signal Engineers. All with whom he came in contact were using some of the Dixon products that are so well adapted for railway service, and the same also may be said regarding the majority of the manufacturers represented at the convention.

HOW TO PLACE METAL IN CRUCIBLES

In a little treatise on the care and use of crucibles, the following good advice is given on how to place metal in a crucible:

Sufficient time and special care should be exercised in placing the metal in a crucible. It is quite natural to hurry in putting ingots into a crucible in order that the cover of the furnace shall not be left off too long. It is more or less dangerous, however, to jam the ingots, so particular care should be taken to see that they be placed in the crucible loosely.

Graphite is an inert substance, and as graphite is the cruci-

ble's principal ingredient, the only expansion possible to a crucible comes from its clay body; hence, if cold ingots are wedged in a crucible and jammed to fit tight, their expansion, which is much greater than the expansion of the crucible, will crack the latter before the melting point is reached.

—*Foundry News.*

KIND WORDS FROM A PUMPING STATION

HEGEWISCH PUMPING STATION,

HEGEWISCH, ILL., Oct. 6, 1910.

Joseph Dixon Crucible Company.

GENTLEMEN:—I have tested the samples of solid belt dressing and pipe joint compound and found them entirely satisfactory.

About one month ago, I began using Dixon's Special Graphite mixed with lubricating oil on the gas engines at this plant and I am pleased to state the engines run very smoothly, with less friction than formerly.

I have got rid of a hot running crank-pin and main bearing; have also been able to cut down the amount of oil used.

Yours very truly,

JOHN T. DUFFY, Engineer in charge.

THE CHRISTMAS STOCKING

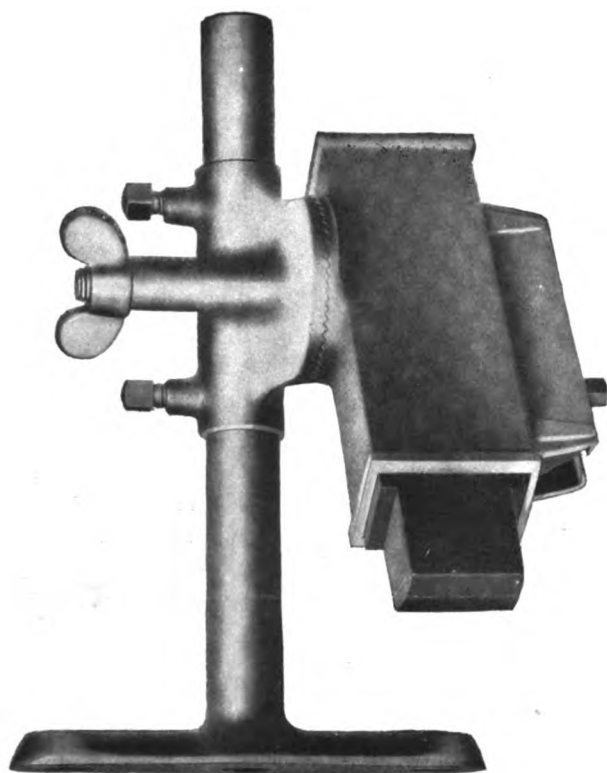
The *Scrap Book* tells us that the habit of hanging up the stocking as a reminder to Saint Nicholas is not a universal one, Holland being the only European country where this practise obtains.

In Belgium, Spain, France and the Scandinavian countries, shoes are used instead of stockings. In the last mentioned section, it is said that the families living in the country spread a table with good things to eat and leave their doors open to any who may wish to enter as guests. Any person desiring to bestow a Christmas remembrance, wraps it in straw and paper and then waiting for an unobserved moment, flings it in through the door or window.

The rising generation of England misses all the little touches that mean so much to the American child at Christmas time, except the Christmas tree.

DRIVING WHEEL FLANGE LUBRICATOR

On roads having numerous curves the matter of sharp flanges is one of the most important and expensive features of maintenance that have to be contented with. Recently the practise of lubricating the flange of a driving wheel has been introduced with very decided success and it has been found that a locomotive equipped with a flange lubricator will in some cases give twice the mileage before it needs to be taken in for tire turning that was previously possible. While, of course, the expense and delay in turning tires is the most important

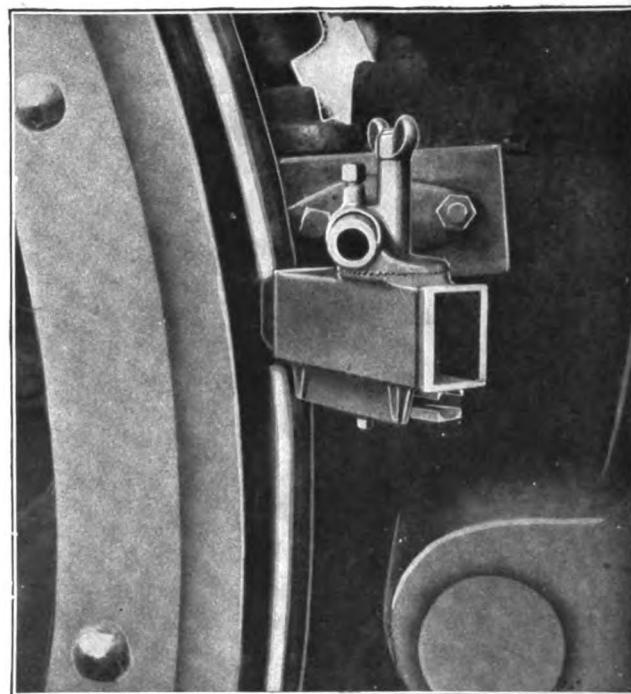


feature in this connection, there is also some gain in the power of the locomotive, there is considerably less wear on the rail heads and the general machinery of the locomotive is not strained as much.

In applying a flange lubricator, it is of particular importance that it shall operate and be of such form that there will be no possibility of getting any of the lubricant on the wheel tread or the head of the rail. Therefore, while oil has in certain instances been used with some success, a solid block of lubricant, as a stick of graphite, is much more satisfactory.

In the accompanying illustration is shown a wheel flange lubricator which has proved remarkably successful in practise. Its simplicity and durability are easily recognized from the photograph and it will be seen that it is provided with all necessary adjustments and so designed that it can be easily located to avoid sand pipes, brake hangers and other parts. It is recommended by the manufacturers of this appliance, the Collins Metallic Packing Company, of Philadelphia, that it be set at an angle of twenty-five degrees with the axle, and while it can be located on either the front or back of the wheels, they recommend that it be on the front of the leading wheel and on the rear of the back driving wheel, and that it also be set slightly above the center line. There is a compression latch on the bottom of the device which engages the lubricating

block. One setting of the block is sufficient for two or three hundred miles' service, and pulling the compression device back one notch can be done in an instant and prepares the



Wheel Flange Lubricator Applied to Front Driver

lubricator again for an equal service. A new block can also be applied very easily. The manufacturers report that one lubricating block will make from 2,500 to 3,000 miles on a high speed passenger and 3,500 to 4,000 on a switch engine. The heating of the tire, due to excessive braking, does not affect the efficiency of the lubricator.

—*American Engineer and Railroad Journal.*

We are very glad to be able to say in this connection that the graphite blocks used in the Collins equipment are manufactured by the Joseph Dixon Crucible Company, with the Dixon Ticonderoga Flake Graphite as a base. The peculiar advantages that graphite possesses for this service are so obvious as to need no further explanation.

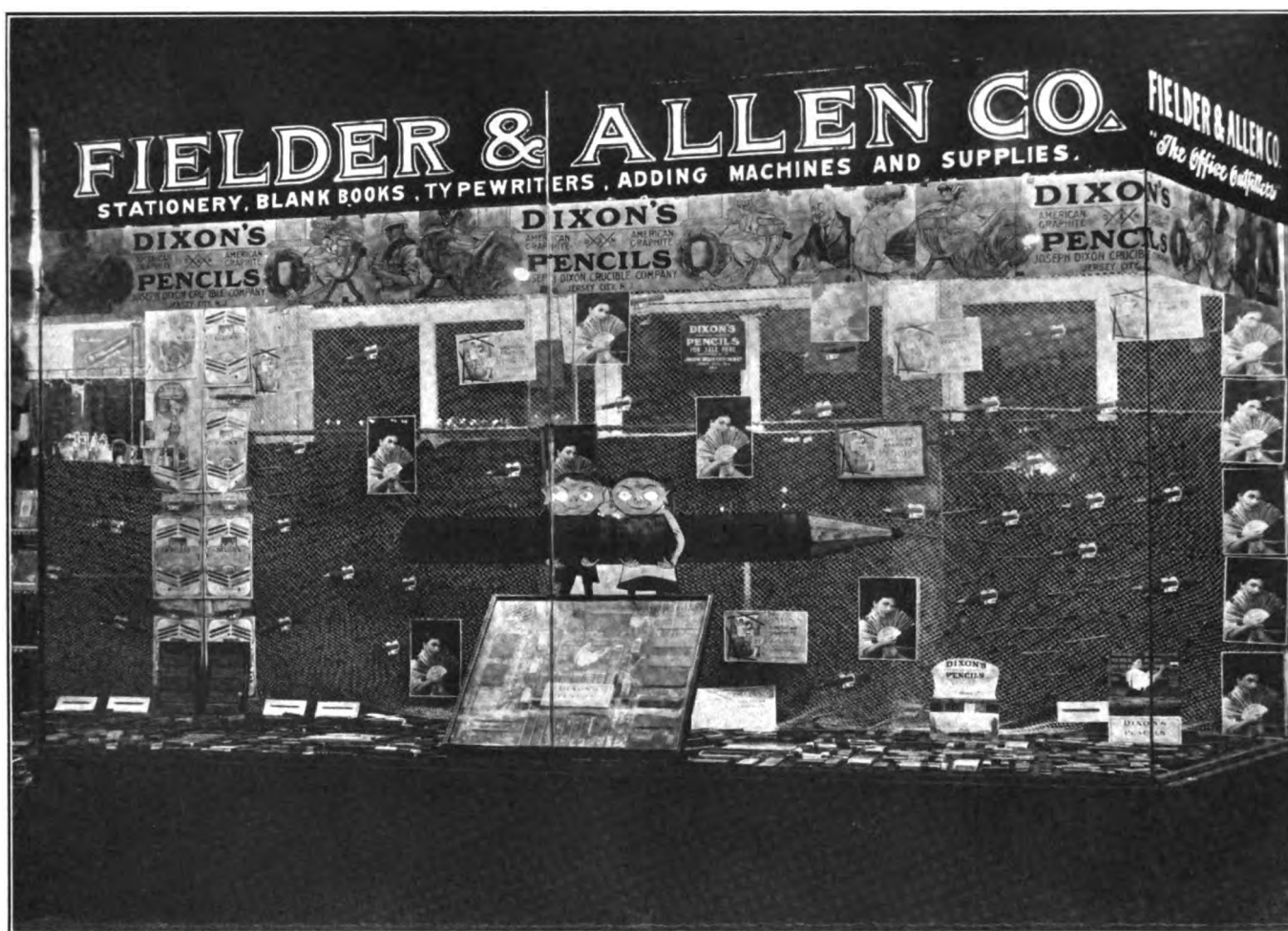
AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION'S CONVENTION

The convention of the American Railway Bridge and Building Association was held this year at Denver, October 18 to 22. The Dixon representatives there were Mr. H. A. Nealley, manager of the Dixon Boston office, and Mr. H. A. VanDerslice, manager of the Dixon St. Louis office, and they both reported it as being a most interesting and successful convention. The membership of the association is growing and the gospel of better protection for steel structures as supplied by Dixon's Silica-Graphite Paint is also spreading.

ONE of our customers writes us as follows:

"Enclosed you will find check for \$25.20 covering one half barrel transmission grease.

"We find this grease to be the best on the market and it pays to use it."



Attractive Window Display of Dixon's Pencils by Fielder & Allen Company, an Energetic Atlanta Concern

GEARS TOO NOISY

Will you kindly answer in your Mechanical Department what I can put in my transmission to quiet it. It is a planetary transmission. I have had it all overhauled and every gear seems to be in good condition, but running on slow or standing, the transmission is very noisy. Am using the heaviest grease I can get, but that does not do it. What can I put in that will help it?

EAST PEPPERELL, MASS.

NOISY.

Just the best remedy is not apparent. The Dixon Company make a gear grease which contains wood sawdust. This dust deadens the click of the gears quite a little. It is one objection to the planetary gear that it does make a noise and its gears turn when the vehicle is not being driven.—C. E. D.

—*Cycle and Auto Trade Journal.*

KEEPING PADLOCKS IN GOOD CONDITION

From the "Signal Engineer"

Signal department padlocks on cases which contain apparatus that must be inspected frequently, do not as a rule remain unused long enough at a time to become rusty and hard to open. But padlocks sometimes work hard after having been in use for a while and when they stand for some time without being opened, are almost invariably hard to unlock and must be oiled up to get them to work easily. A good way

to keep locks of all kinds in excellent condition, is to blow dry graphite into them through the key-hole and then work them a number of times so as to give the graphite a chance to cover the working parts pretty thoroughly. The graphite may be put in an oil can with a long spout and by this means worked and blown into all parts of the lock. Padlocks treated in this manner will be easy to open after remaining unused for long periods of time, as the graphite does not dry out like oil, but retains its lubricating properties indefinitely.

The above appeared in the September, 1910, issue of the *Signal Engineer*. We would recommend the Dixon Lubricating Graphite No. 635 for this work. Dixon's No. 635 is a special grade of Ticonderoga flake graphite which is especially prepared for the lubrication of delicate mechanism.

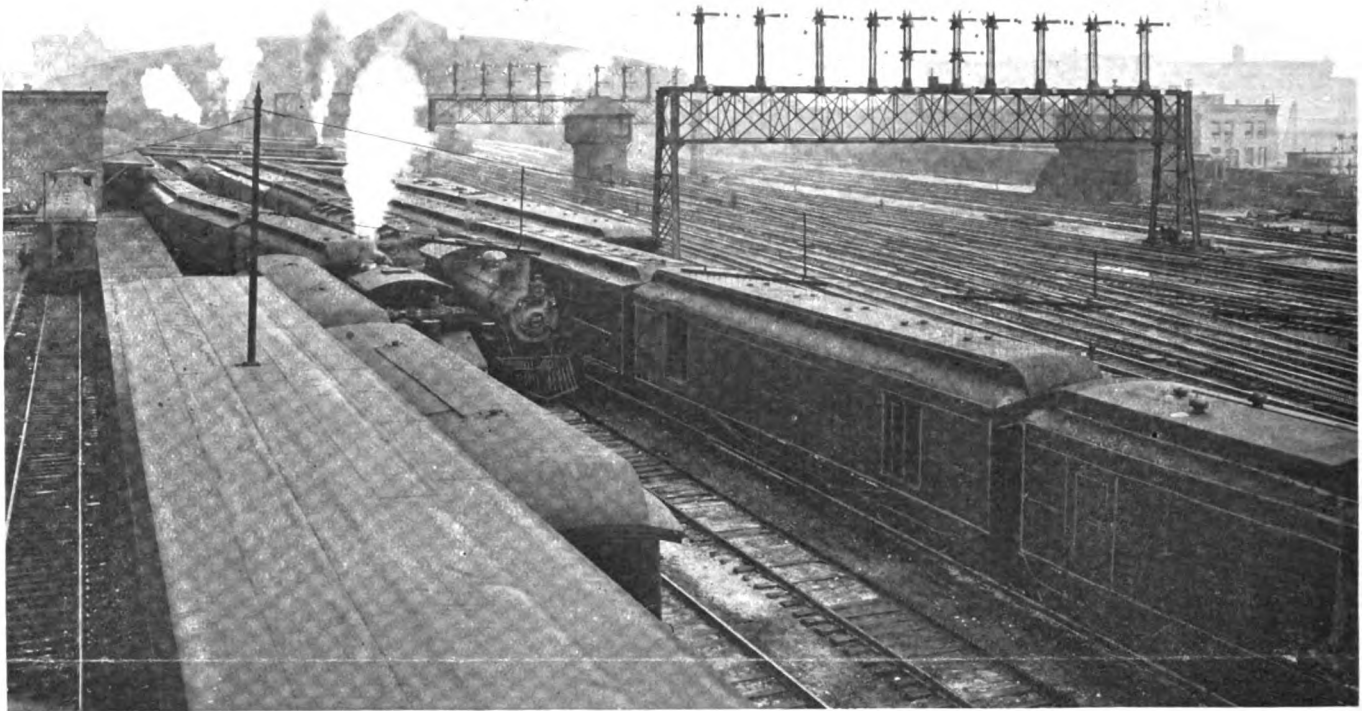
HE KNEW

"Look here," said one of the jurymen, after they had retired, "if I understand aright, the plaintiff doesn't ask damages for blighted affections or anything of that sort, but only wants to get back what he's spent on presents, pleasure trips and so forth."

"That is so," agreed the foreman.

"Well then, I vote we don't give him a penny," said the other hastily. "If all the fun he had with that girl didn't cover the amount he expended, it must be his own fault. Gentlemen, I courted that girl once myself."

—*The Housekeeper.*



Boston Terminal Yard Adjoining South Terminal Station.

Signal Bridges Painted with Dixon's Silica-Graphite Paint

The accompanying photograph shows some of the signal bridges in front of the greatest railway terminal in the world.

In the course of a week, thousands of trains pass under them and from the sea comes the salt air, which as everyone knows is most disastrous to metal not properly protected.

Four years ago these bridges were painted with Dixon's Silica-Graphite Paint and today they are in perfect condition.

PAINT FOR SIGNAL SERVICE

The excellent qualities of Dixon's Silica-Graphite Paint as a protective coating for metal exposed to severe atmospheric conditions, has attracted the attention of prominent signal engineers throughout the country.

As a result, Dixon's Silica-Graphite Paint has been adopted as a standard on important railway systems where quality is recognized as a most important factor in perfecting as far as possible that important branch of railway service, the Signal Department.

This paint has not only proved adequate for properly protecting the many miles of signal pipe, but has given splendid service on signal bridges as well as on wood work used in connection with signal apparatus.

There is probably no metal work used in the equipment of a modern railroad that is exposed to more severe conditions than the signal pipe. It is not only attacked by that fierce foe, the brine from refrigerator cars, which quickly eats un-

protected metal, but in the winter, salt is often employed to melt the snow and ice from the tracks, and this mixture, most conducive to corrosion, comes in contact with the pipes. The pipe lines also have to face the burning sun of summer, the ice and sleet of winter, the terrific blasts of wind driven cinders and sometimes, on overhead tracks, the blasts of locomotives from below. Despite all these conditions, well qualified to prove disastrous to metal improperly protected, Dixon's Silica-Graphite Paint remains in perfect unbroken condition, its tough elastic coating not only furnishing a staunch shield against wind and weather, brine and cinders, but permitting the pipes to run smoothly over the rollers thus facilitating quick operation in a service where accuracy and dispatch are of vital importance.

HEARD AT THE BURLESQUE SHOW

Polly Footlight.—“Here, sister, is a package of stove polish.”

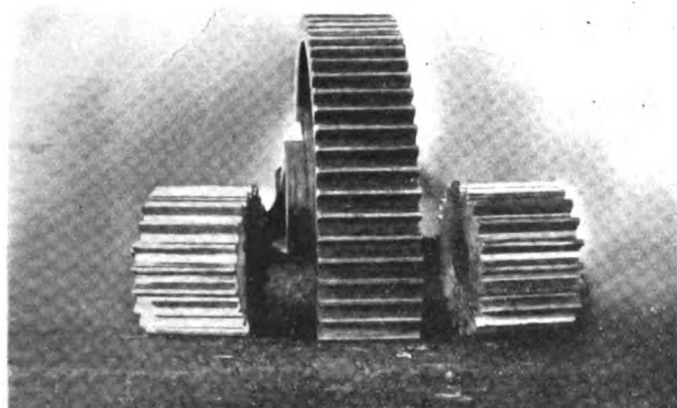
Dolly Limelight.—“Why should I need a package of stove polish?”

Polly Footlight.—“Oh, to use on the range in your voice. It is getting a little rusty.”

Little flakes of graphite,
Scattered here and there
On a bearing surface,
Save all wear and tear.

DIXON'S GRAPHITE WOOD GREASE IN GEARS OF ELECTRIC CARS

We show herewith two photographs of gears that have been removed from a car which made 200,000 miles. We believe traction car companies will be interested in seeing these photographs and learning of the service that Dixon's Graphite Wood Grease provided—and can always provide.



We also reproduce herewith the letter from the Easton and Washington Traction Company with reference to the service the Dixon lubricant supplied.

EASTON AND WASHINGTON TRACTION CO.

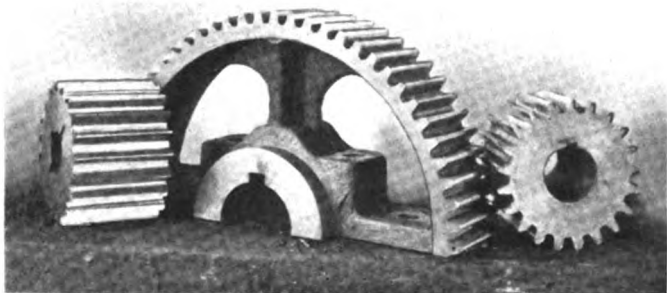
EASTON, PA.

September 27, 1910.

Joseph Dixon Crucible Company,

Philadelphia, Pa.

GENTLEMEN:—About a week ago your Mr. Willitts was at our plant and our foreman showed him some gears and pinions that had been in service on our road for the last three years, and have never been renewed from the day we bought them up to the present time, each having made over 200,000 miles. We have never used anything on these gears and pinions but Dixon's Graphite Wood Fibre Gear Grease.



Mr. Willitts said you would like very much to have these to show at Atlantic City, and it gives us pleasure to send them to-day, by freight, as he requested, and we hope they will do you some good. It gives me great pleasure to say that, for the three roads I have been buying for, during a

long period of years we have used nothing but this gear grease. We have tried many other kinds, but find this the most satisfactory.

Very truly yours,

(Signed) W. O. HAY,

General Manager.

TWELVE YEARS OF DIXON'S AXLE GREASE

We reproduce herewith two letters received from a western user of our axle grease. We believe there is nothing we can add that will render them more effective, and so reprint them *verbatim* without additional comment.

LINDSAY, CAL., June 23, 1910.

Joseph Dixon Crucible Company.

DEAR SIR:—I have been using your Dixon's Everlasting Axle Grease for the last twelve years and can say it is the best out.

I bought mine in Oklahoma, and last spring I moved to California, and I cannot obtain any of your grease here in Lindsay. Can you tell me of any town in California it is sold to, so I can send and get it, for I would not do without it?

Hoping to hear from you soon, I am,

Yours respectfully,

N. L. ANDERSON.

LINDSAY, CAL., July 11, 1910.

Joseph Dixon Crucible Company.

DEAR SIR:—Your favor of the 6th to hand, will say that you are at liberty to publish all letters I may write to you, as I cannot speak too highly of your Everlasting Axle Grease. I wish you could get the Lindsay Mercantile Company to handle your axle grease. I have talked to them about it and they seem to be favorably impressed with it.

Yours truly,

N. L. ANDERSON.

LUBRICATION TEST AT PURDUE UNIVERSITY

By the addition of graphite to oil, there is a lower frictional resistance of the journal; the amount of oil required for a given service is reduced; a light or inferior quality of oil may be employed, water under favorable conditions may serve as a sufficient lubricant; a small amount of graphite only is required, as too much unduly thickens the oil and increases its internal friction due to viscosity. The benefits derived from the graphite persist long after its application has ceased.

—*American Engineer and Railroad Journal.*

TODAY begins a New Year. The date on the calendar does not matter.

The earth starts every morning on its year-long journey round the sun as truly as on the first day of January, and each new dawn is therefore a fresh opportunity to begin right.

It is for us to determine what the year shall be.

The demand upon us is not that we succeed, but only that we try; and to try manfully every day and all day long, is inevitably to attain in the end a supreme success.

—*Youth's Companion Calendar* 1910.

WIRE ROPE LUBRICATION

As soon as a rope is put into service wear and corrosion begin to act. Unless something is done to counteract these weakening agencies, the heavy expense of frequent renewals will follow. Wire rope is subjected to both internal and external wear. The first results from the rubbing of the strands and wires upon one another; the second is caused by the slipping and rubbing of the rope as it winds and unwinds about the drum and over the pulleys.

Corrosion results from exposure to moisture, gases and like corrosive influences. Often in mine service, acid or alkaline water reaches the rope and hastens its destruction.

Dixon's Waterproof Graphite Grease

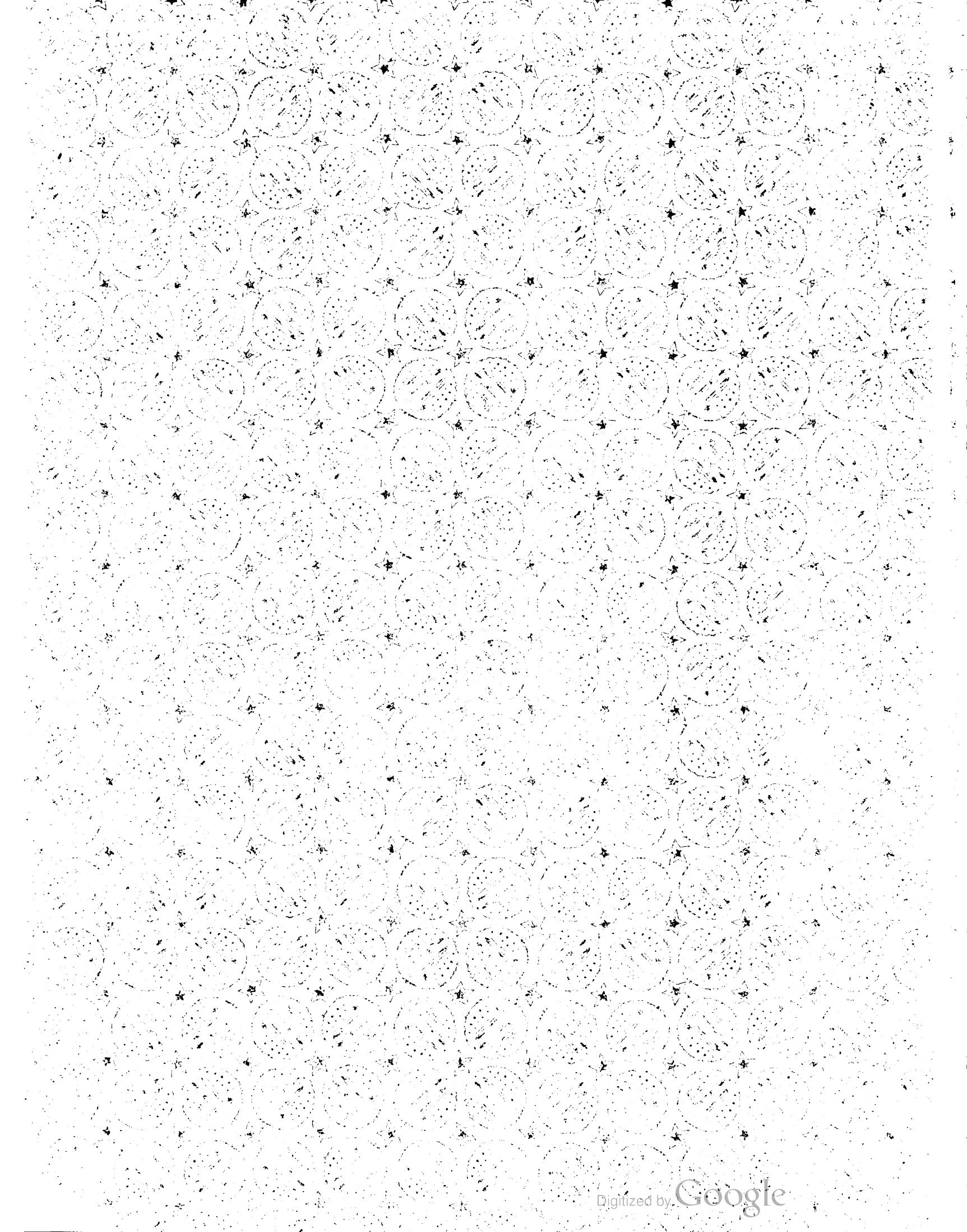
will protect the rope against both wear and corrosion. Its peculiar efficiency is due to the flake graphite in its composition, which beside being the best of solid lubricants, is entirely unaffected by moisture, atmosphere, gases, acids or alkalis.

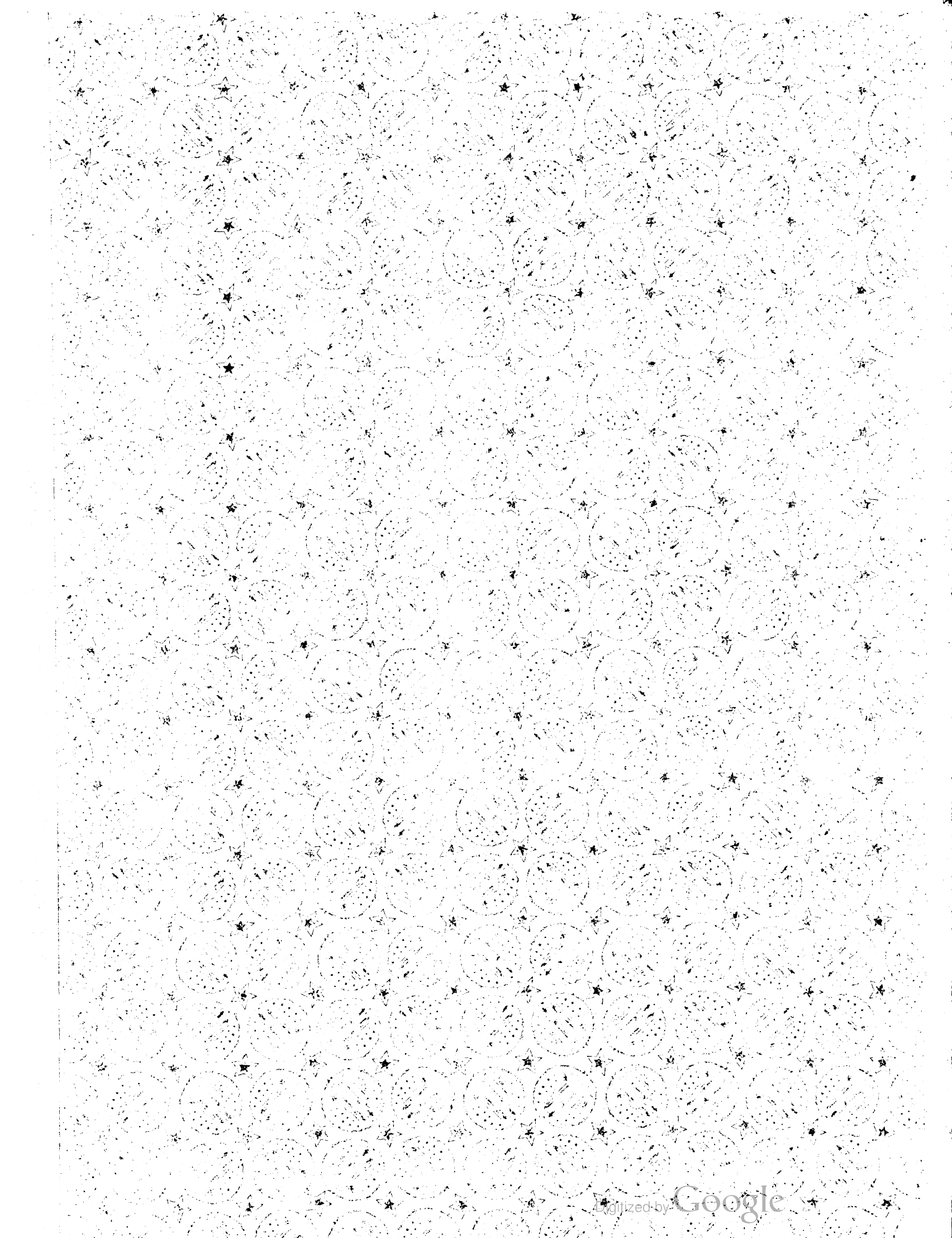
Flake graphite is tenacious and coats the rope with a durable tough veneer that prevents damage to the rope and increases its life. Dixon's Waterproof Graphite Grease, however, does more than preserve the outside of the rope. It works into the innermost strands, minimizing internal friction and saving wear.

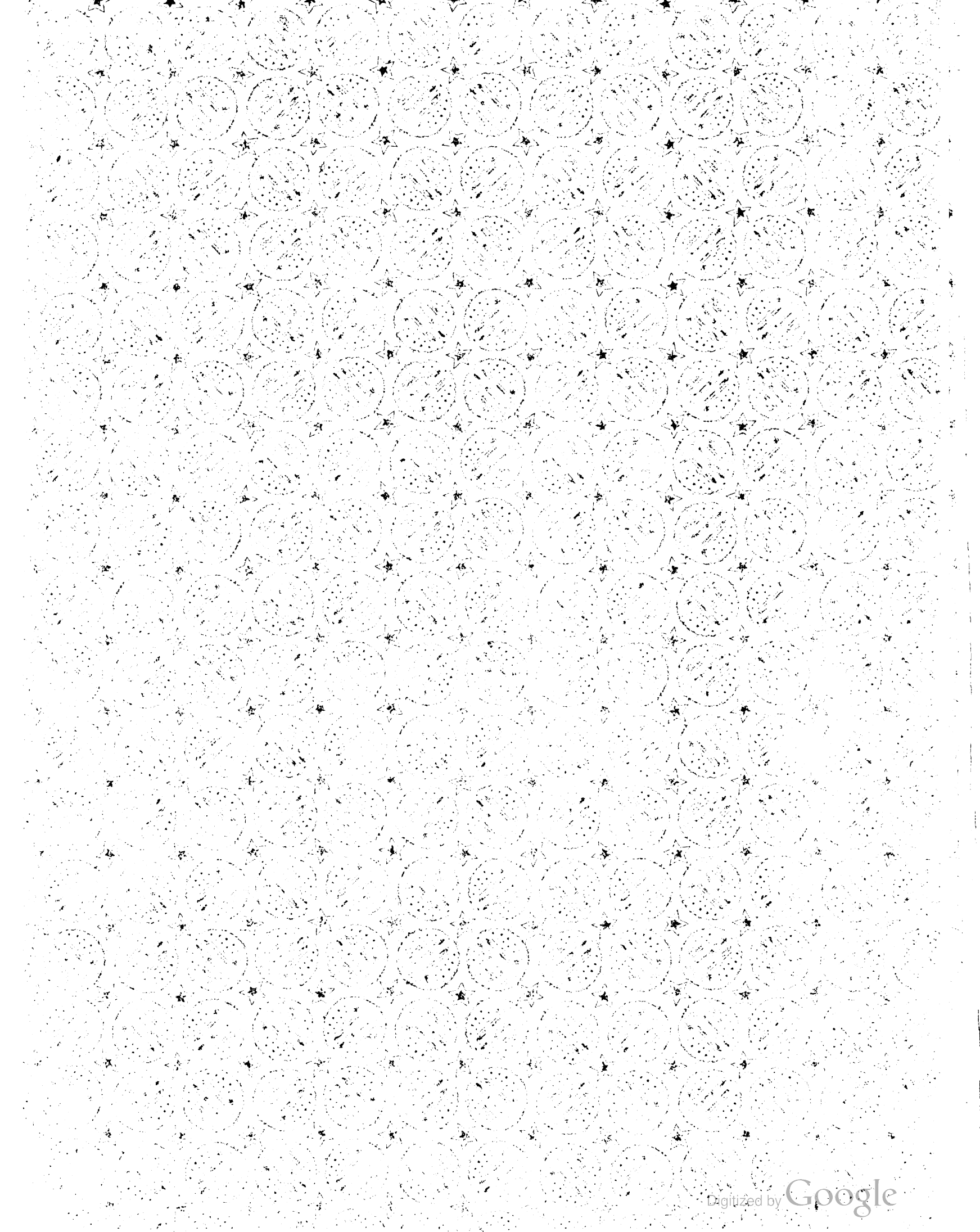
All the qualities which we ascribed to Dixon's Waterproof Graphite Grease have been demonstrated in actual practise. We would be glad to supply you with free sample if you wish to try it on ropes and cables under your own supervision.

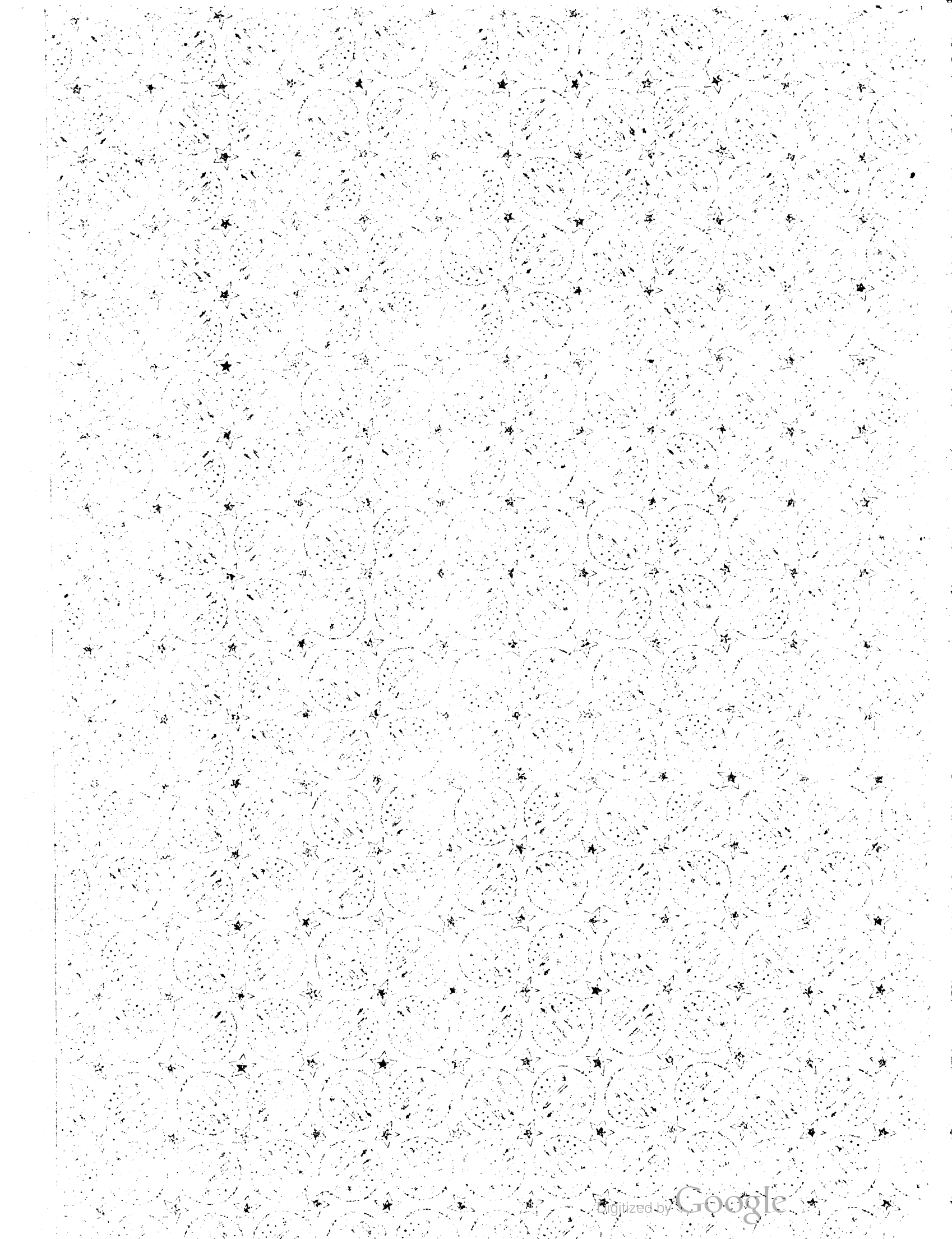
Joseph Dixon Crucible Co.

Jersey City, N. J.









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